

**REPORT OF THE
SPECIAL RECLAMATION FUND
ADVISORY COUNCIL**

January, 13 2015



2014 SRF Advisory Council Annual Report

EXECUTIVE SUMMARY

The Special Reclamation Fund Advisory Council (the “Council”) was established by the Legislature in 2001 in order to ensure the effective, efficient and financially stable operation of the Special Reclamation Fund (the Fund). (W.Va. Code § 22-1-17). According to W.Va. Code § 22-1-17 the Council shall consist of eight members, including the Secretary of the Department of Environmental Protection or his or her designee, the Treasurer of the State of West Virginia or his or her designee, the Director of the National Mine Land Reclamation Center at West Virginia university and five members to be appointed by the governor with the advice and consent of the Senate.

The Fund is designated by the Legislature for the reclamation and rehabilitation of lands subject to permitted surface mining operations and abandoned after 1977, where the bond posted is insufficient to cover the cost of reclamation. The Fund is presently funded by a tax of 27.9 cents per ton of clean coal mined in West Virginia. From this revenue, funds based on a tax rate of 15 cents per ton are being paid into the Special Reclamation Water Trust Fund (SRWTF), while coal tax revenues based on 12.9 cents per ton are being paid into the Fund. According to W.Va. Code § 22-3-11, “Beginning with the tax period commencing on July 1, 2009, and every two years thereafter, the special reclamation tax shall be reviewed by the Legislature to determine whether the tax should be continued: *Provided*, That the tax may not be reduced until the Fund and SRWTF have sufficient moneys to meet the reclamation responsibilities of the state established in this section.”

The SRWTF was created “for the purpose of assuring a reliable source of capital to construct, operate, and maintain water treatment systems on forfeited sites.” (W.Va. Code § 22-3-11).

The Secretary of the Department of Environmental Protection is required to conduct formal actuarial studies every two years and conduct informal reviews annually on the Fund and SRWTF. The Council is also required to make a report to the Legislature every year on the financial condition of the Fund. (W.Va. Code § 22-1-17). The report is to include: “A recommendation as to whether or not any adjustments to the special reclamation tax should be made considering the cost, timeliness and adequacy of

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bond forfeiture reclamation, including water treatment [and] a discussion of the council's required study issues.”

In accordance with the statutory requirements, the Council submits the following:

- 1. Recommendation:** The Council recommends that the present 12.9 cent per ton tax dedicated to the Fund remain in force and that the tax dedicated to the SRWTF will remain at 15 cents per ton. The Council will have a new study done this year. Additional recommendations by the Council can be found in the body of this report on page 22.
- 2. Study issues:** Pursuant to W.Va. Code §22-1-17, the Council is also required to “Identify and define problems associated with the special reclamation fund.” The Council conducted multiple studies during 2014 to better assess the current and future financial condition of the funds and to improve upon water treatment technologies:

Studies conducted during the 2014 report period include:

- a. Consensus Coal Production Forecast for West Virginia: 2014 Update by Christine M. Risch and Dr. Jennifer Shand from the Center for Business and Economic Research at Marshall University.
- b. Enhancing AMDzine with Selenium and Aluminum treatment options by Dr. Paul Ziemkiewicz of West Virginia University Water Research Institute.
- c. Alternative Enforcement Evaluation by DEP.

Findings of these studies are outlined in the body of the report.

BACKGROUND ON THE SPECIAL RECLAMATION FUND

Article 1, Chapter 22 of the Code of West Virginia was amended by the West Virginia Legislature in 2001, creating an eight member Special Reclamation Fund Advisory Council (the “Council”) with the responsibility of ensuring the effective, efficient and financially stable operation of the Special Reclamation Fund. The legislation establishing the Council also increased the tax on clean coal mined in West Virginia, from three to seven cents per ton (the “Continuing Tax”), and levied an additional seven cents per ton (the “Temporary Tax”), to be deposited into the Fund. The

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revenues of the Fund were designated to pay for reclamation on post-1977 bond-forfeited sites.

The 2001 legislation provided for the Temporary Tax to be in effect for thirty-nine months. As a result of a 2005 actuarial report finding that the expiration of the Temporary Tax would result in nearly immediate insolvency of the Fund, the Temporary Tax was extended by the Legislature in 2005, for an additional eighteen months. A 2007 actuarial study commissioned by the Council found that the failure to extend the Temporary Tax again would result in insolvency of the Fund. Accordingly, in 2008 the Legislature, through SB 751, created the SRWTF and enacted a temporary, twelve month tax of 7.4 cents which was to be allocated between the Fund and a SRWTF. Twelve and nine-tenths cents was dedicated to the Fund and 1.5 cents was deposited into the SRWTF. An updated actuarial study in 2008 concluded that terminating the temporary tax would result in insolvency within a few years. In response, in the 2009 legislative session, the Legislature amended W.Va. Code § 22-3-11 to remove the expiration date for the Temporary Tax and provided instead for biennial review of the Tax by the Legislature. (Acts of the Legislature 2009, chapter 216).

Based upon projections under the 2011 Actuarial Valuation performed by Pinnacle Actuarial Resources, Inc. the Fund was found to be sufficiently funded under the existing 12.9 cent tax. However, the Council was concerned that as the SRWTF began making payments for water capital and ongoing water treatment in Fiscal Year 2019, as projected, the SRWTF would fall into a deficit position in the second year of operation-2020.” (2011 Actuarial Valuation, page 3). Declining coal production projected by the 2011 Consensus Coal Production Forecast and the significant increase in water treatment costs resulting from court rulings in two cases are contributing factors in the projected insolvency of the SRWTF. Accordingly, in 2012 the Legislature increased the special reclamation tax to 27.9 cents per ton, 15 cents of which was to be deposited into the SRWTF.

Based upon projections under the 2013 Actuarial Valuation performed by Pinnacle Actuarial Resources, Inc. the Fund is projected to be over 100 percent funded using a 20-year cash flow basis and 95.7 percent funded using a 35-year cash flow basis. The SRWTF is currently accumulating 15 cents per ton coal tax revenue and interest and

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is projected by the 2013 Actuarial Valuation to be 150.4 percent funded using a 20-year cash flow basis and 89.9 percent funded using a 35-year cash flow basis.

Membership Status of the Special Reclamation Fund Advisory Council

Currently Christine Risch, Marshall University, Center for Business and Economic Research, serves as the Actuary/Economist member. Carolyn Atkinson serves as the member representing the Treasurer of the State of West Virginia. Dr. Paul Ziemkiewicz serves as the member representing the Director of the National Mine Land Reclamation Center at West Virginia University. Bill Raney serves as the member representing the interests of the coal industry. John Morgan serves as the member representing the interest of environmental protection organizations. Ronald Pauley serves as the member representing the interests of coal miners. The SRFAC member representing the interests of the general public is currently vacant.

FINANCES OF THE SPECIAL RECLAMATION FUND & THE SRWTF

This section of the Report to the Legislature outlines the financial status of the Fund for calendar year 2014 and provides comments regarding the future financial position of the Fund. The three key factors that have the most effect on the adequacy of the Fund are the coal production levels in West Virginia, the risk of future forfeitures, and the cost of reclaiming existing and future bond-forfeited sites.

To summarize the data and analysis that follow, it should be noted that the Fund will cover all costs for both land reclamation and water treatment through June 2018. Starting in July 2018, the SRWTF will begin covering the cost for water treatment—both water capital costs and ongoing water treatment costs.

It should also be noted that even though the Fund is expected to carry a positive balance at the end of 20 years, the fund is projected to dip into a slight negative balance in 2018 prior to disengaging from covering the liabilities of the SRWTF in 2019. After 2018 the Fund is projected to add to its balance for a while before the impact of inflation and forfeiture activity outweigh the benefits of investment income and release activity. The Fund is projected to go back to a negative balance in 2038.

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Based upon projections under the 2013 Actuarial Valuation, the SRWTF is projected to have sufficient capital to operate until some point in 2038 before experiencing a deficit. Due to the increased expected revenue from the increased tax for water treatment, the Funded Status of the SRWTF has improved tremendously since the last report. This is also the result of an improved investment strategy as described below.

In May of 2013, following numerous discussions between DEP personnel and members of the Investment Management Board and the Board of Treasury Investments, the Council was updated on various investment options and made the following recommendations:

The first recommendation is two parts:

1. That the current balance of the Water Quality (WQ) Trust Fund and all additional revenue of the WQ Trust Fund through Fiscal Year (FY) 2018 be invested in the Investment Management Board (IMB) fixed income pool until FY 2019.
2. That DEP develop plans to maximize the return on investment for future WQ Trust revenue.

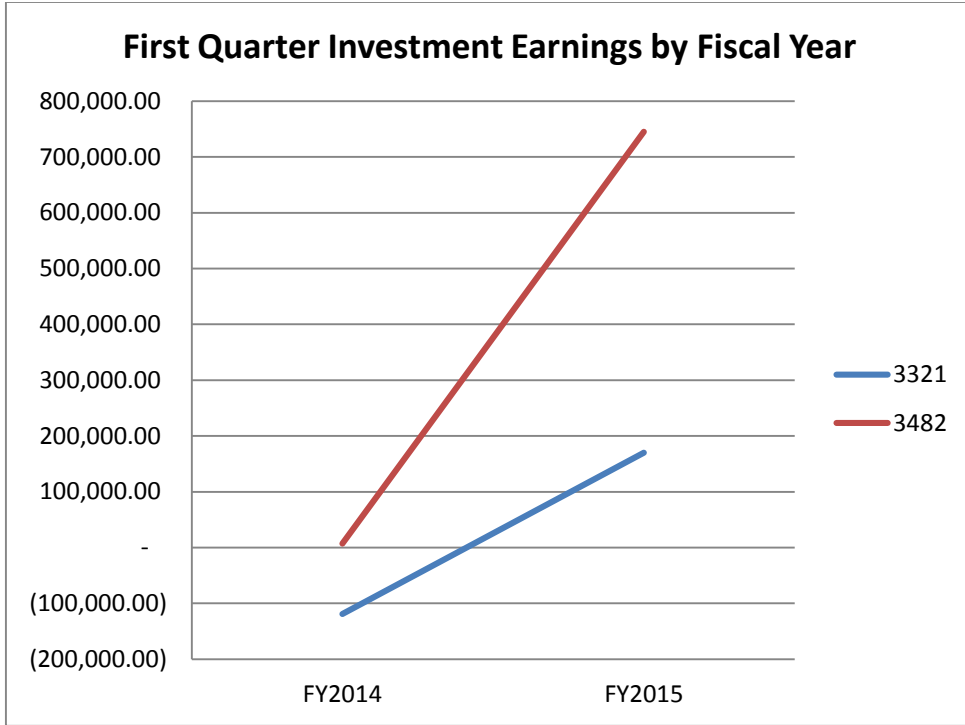
The second recommendation is also two parts:

1. That the current balance of the Special Reclamation (SR) Fund be invested in the West Virginia (WV) short term bond pool with the exception of \$5 million, which should remain in the WV money market pool.
2. That DEP develop plans to maximize the return on investment for future SR Fund revenue.

In October of 2013 the balance of \$28 million from the SRWTF was transferred to the Investment Management Board Fixed Income Pool.

In June of 2013, with the exception of \$5 million, the balance of the Fund was transferred to the WV Short Term Bond Pool. The following charts depict the results of the new investment strategies.

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Where 3321 represents the Fund and 3482 represents the SRWTF.

Figure 1

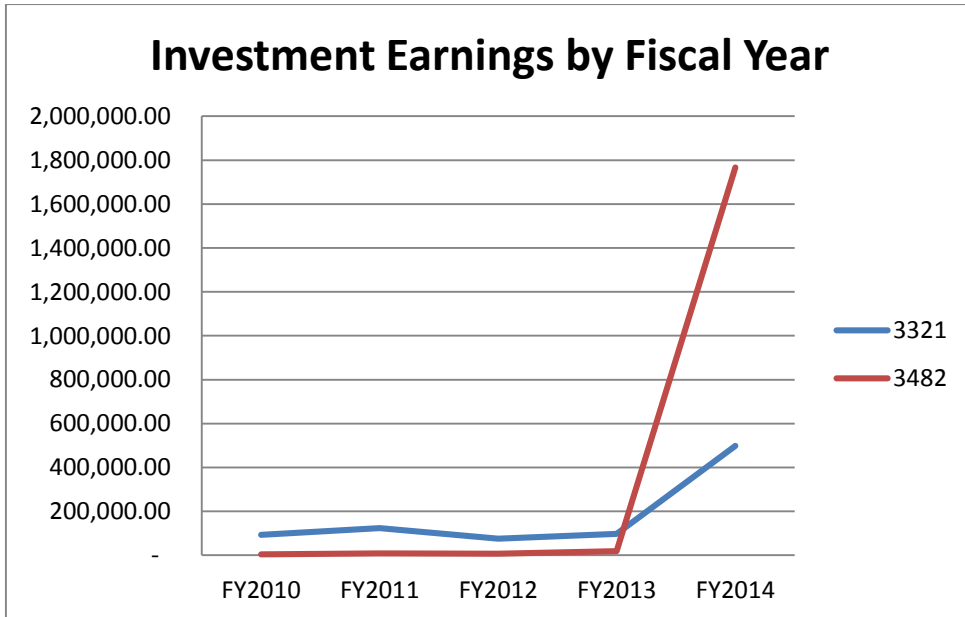


Figure 2

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Since 2001, despite a very aggressive reclamation schedule, the Fund and SRWTF have been serving the people of West Virginia well through providing for the reclamation of bond-forfeited sites. At the time of the initial legislation in 2001, there were 392 forfeited permits requiring reclamation, including some requiring water treatment. Since passage of that legislation, an additional 185 permits have forfeited as well, bringing the total to 577 permits requiring reclamation. Of those, work has been completed on 472 permits. With regard to water treatment, the Fund is treating water at 142 sites and has an additional 63 sites under review or construction; 79 sites have been determined to have no conditions requiring treatment or have completed treatment. As of September 30, 2014, the Fund had accumulated cash and investments totaling \$ 81.3 million, while the SRWTF had accumulated \$45.9 million.

Graphic summaries of the status of the Funds are outlined in the following figures.

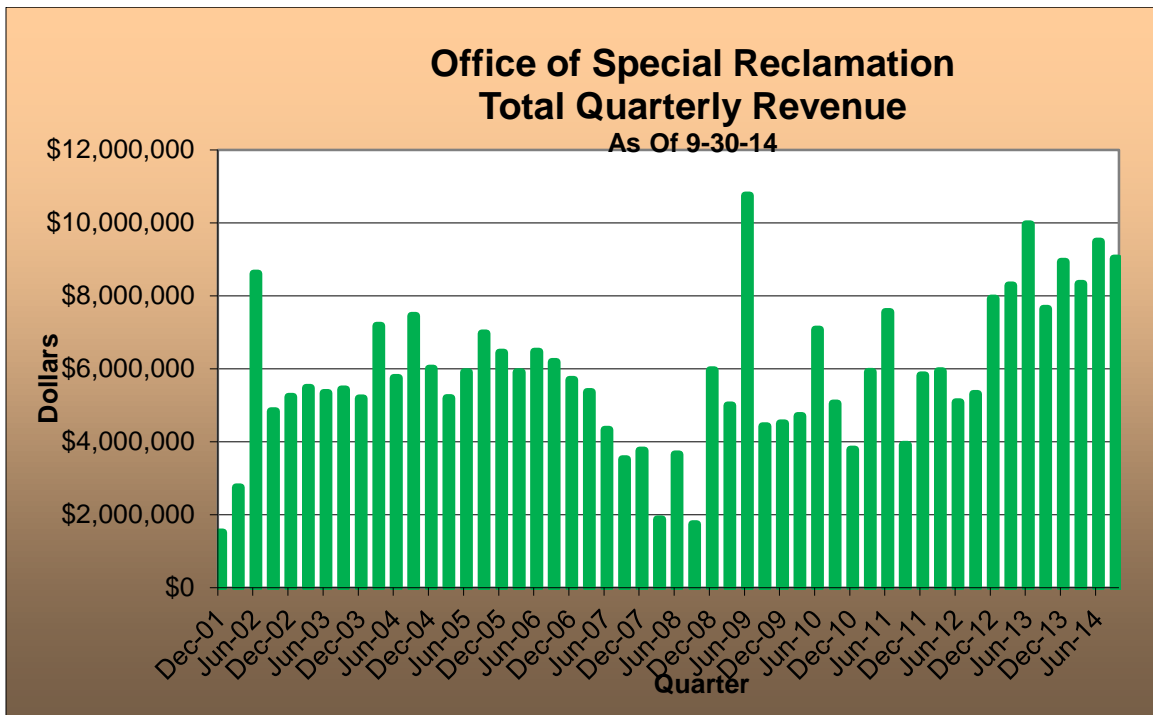


Figure 3

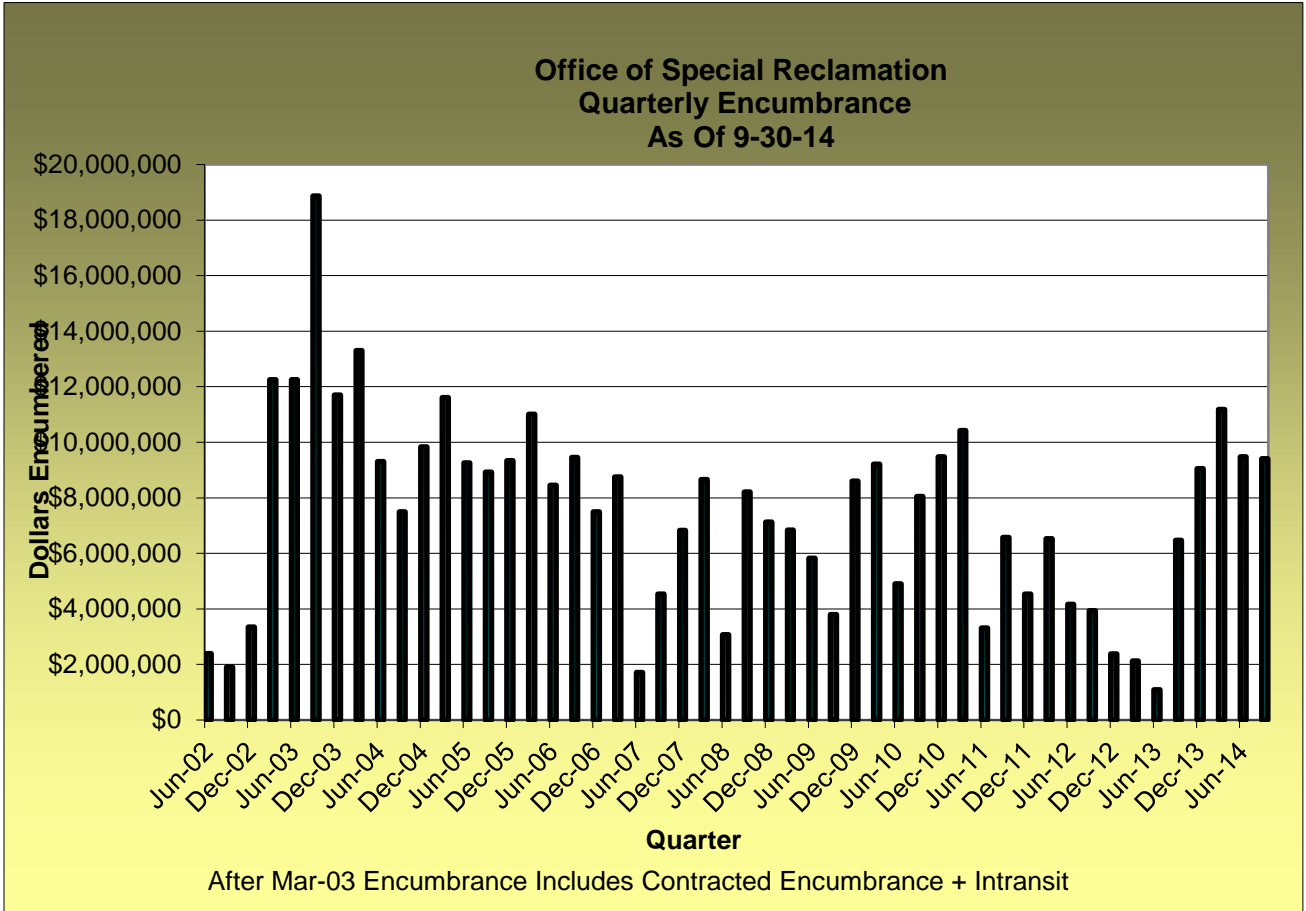


Figure 4

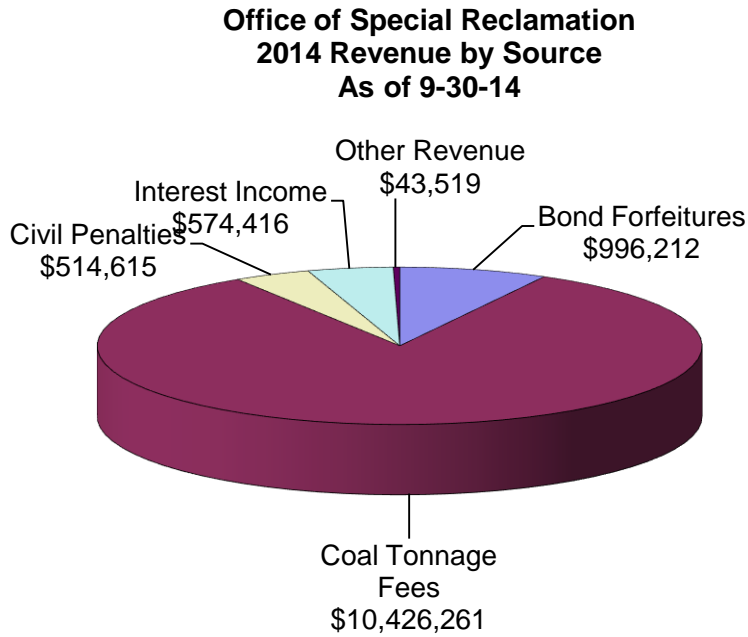


Figure 5 Revenue Sources

Water Treatment Funding

The current main funding mechanism for bond-forfeited sites is the 27.9 cent tax per ton of clean coal mined. In 2008, the Legislature authorized, but did not separately fund, the Special Reclamation Water Trust Fund (“SRWTF”). In reliance on the SRWTF statutory authorization, beginning in July 2008, coal tax revenues based on a tax rate of 1.5 cents per ton were being paid into the SRWTF. In addition, coal tax revenues based on 12.9 cents per ton were being paid into the Fund. In 2012 the Legislature increased the amount dedicated to the SRWTF to 15 cents per ton, but based on the funded status of the Fund at the time the Fund remained at 12.9 cents per ton. Unless modified in response to future legislation, for budgeting and analysis purposes, the DEP plans to continue paying

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all costs for both land and water reclamation work out of the Fund through FY 2018. Funding the water reclamation and treatment from the Fund will allow the SRWTF to build up assets, although it is not anticipated to be solvent without future continuing funding. The current balance in the SRWTF is \$45.9 million as of September 30, 2014. The Council is continuing to look at alternatives for water treatment funding.

Increased water capital cost and water treatment cost are the result of two identical lawsuits filed against the DEP. The northern and southern district courts entered into separate consent decrees in 2011 and 2012 respectively. As will be discussed later in this report, the DEP is now required to apply for and obtain NPDES permits for all the sites included in Attachment A of the consent decrees plus an additional 21 sites which were included in an earlier lawsuit, for a total of 192 sites. DEP estimated that it will cost approximately \$35.5 million to bring bond forfeiture sites into compliance with the more stringent water quality based effluent limits. Additionally, DEP estimates that it will cost approximately \$6.7 million to operate and maintain these treatment systems on an annual basis.

Additional Charges to the Fund Due to NPDES Requirements

Due to NPDES requirements, the DEP has been faced with charging more expenditures to the Fund. These include:

- Realty – Land and/or easement purchases have been necessary to expand existing or new water treatment sites outside permit boundaries. The following are costs associated with expansion of eleven (11) sites where additional land was needed to ensure compliance with the more stringent water quality effluent limits (WQBEL):
 - Surveying - \$184,460
 - Appraisals - \$76,796
 - Appraisal reviews - \$5,500
 - Cost of Timber - \$15,942
 - Recording fees - \$133
 - Easement purchases - \$49,356

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- Hiring private consulting engineers – To meet the requirements of the consent decree and in an attempt to maintain the land reclamation schedule, the DEP has been compelled to hire private engineering consulting firms to complete designs for projects that have historically been done in-house. As of the date of this report three (3) contracts have been awarded at a total cost of \$451,846, and an additional nine (9) contracts have been prepared for bids. DEP estimates that contractual design increases project cost by 10 to 12%.
- Increased staff – As a result of having to apply for and obtain NPDES permits at all bond forfeiture sites now and into the future, the DEP has found it necessary to incorporate an NPDES permitting section into the Office of Special Reclamation (OSR - The office responsible for reclamation of land and waters for bond forfeited sites). Four new staff members consisting of one (1) program manager and three (3) engineering technicians have been added to fulfil the NPDES requirements for the OSR. This is an additional charge to the Fund of approximately \$156,864/year for salaries alone.
- NPDES permitting fees:
 - Application fees - \$1,000/application. As of the date of this report the DEP has applied for 144 NPDES permits equating to \$144,000
 - Modification fees - \$500/mod. As of the date of this report the DEP has submitted 21 modifications equating to \$10,500.
- Water sampling related to permit applications – As of the date of this report, the DEP has spent approximately \$26,313 in laboratory cost for additional water analysis required for NPDES applications.

New DEP Policy Relevant to the Fund

Effective May 21, 2014 the DEP has implemented a new policy establishing a standard procedure the DEP will follow to terminate the State's jurisdiction over bond-forfeited former mining sites (Special Reclamation Sites). With a decision that the

Special Reclamation Site has satisfied the applicable performance standards, DEP will terminate jurisdiction over the subject Special Reclamation Site. The new policy limits the vulnerability of the State, and consequently the Fund, by reducing the possibility of lawsuits pertaining to damages unrelated to former mining practices or reclamation practices, i.e. due to recreation, timbering, oil & gas, etc., as well as any changes to environmental laws taking effect after reclamation of the subject Special Reclamation Site. The DEP will retain jurisdiction of Special Reclamation Sites, or portions thereof, that are necessary for the effective treatment of mine discharges emanating from the subject Site.

Litigation

1. The Fund through FY 2018 and the SRWTF starting in FY 2019 has acquired liability for additional water treatment as a result of lawsuits filed against the DEP, as described below.

Identical complaints were filed in the Northern and Southern District Courts, Civil Actions No. 07-cv-87 (the “Northern District Case”) and No. 2:07-0410 (the “Southern District Case”), assigned to Judge Irene Keeley and Judge John T. Copenhaver, Jr., respectively. Both cases were styled *West Virginia Highland Conservancy and West Virginia Rivers Coalition v. Randy C. Huffman, Secretary, West Virginia Department of Environmental Protection*.

The two suits alleged that the West Virginia Department of Environmental Protection (DEP) had violated, and continues to violate, the federal Clean Water Act (the Act) by failing to obtain West Virginia National Pollutant Discharge Elimination System (WV/NPDES) permits when the Division of Land Restoration reclaims and treats water at bond forfeited sites as directed by state law. The Northern District Case named 18 specific bond forfeited sites and the Southern District Case named 3 sites.

On March 26, 2009, the Northern District Court entered summary judgment in favor of Plaintiffs in the Northern District Case, and granted a permanent injunction. The injunction requires DEP to apply for, process, and issue WV/NPDES permits to itself for the discharge into waters and streams of pollutants from the eighteen bond-forfeited, coal

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mining sites at issue in the case, whose reclamation the agency is required to manage. DEP appealed this decision to the United States Court of Appeals for the Fourth Circuit (“Fourth Circuit Court of Appeals”). By order dated November 8, 2010, the Fourth Circuit Court of Appeals affirmed the Northern District Court’s ruling.

Similarly, a motion for summary judgment in the Southern District Case was granted by Order dated August 24, 2009. The Southern District Court found that the Secretary of the DEP was “in violation of the National Pollutant Discharge Elimination System permitting requirements of the Clean Water Act.” The Southern District Court ordered the Secretary to “apply for, and obtain, NPDES permits for all sites at issue in this action,” and the parties subsequently submitted a joint stipulation agreeing to the same injunctive relief and timeframes for compliance set forth in the Northern District litigation. The Southern District Court entered final judgment August 31, 2010.

On January 11, 2010, the same Plaintiffs (West Virginia Highlands Conservancy and West Virginia Rivers Coalition) and the Sierra Club submitted a letter giving DEP notice of their intent to sue DEP regarding discharges from 131 additional bond forfeited sites on the same legal basis as the previous suits. Based on the outcome of the previous litigation, DEP engaged in settlement negotiations with the Plaintiffs and reached agreement regarding the permitting of the 21 sites in the previous litigation and the additional 131 sites. In August 2011, the Plaintiffs filed two new suits regarding the additional sites, *West Virginia Rivers Coalition, et al v. Huffman*, Civil Action No. 1:11-cv-118 (N.D. W.Va.), and *West Virginia Rivers Coalition, et al v. Huffman*, Civil Action No. 2:11-cv-524 (S.D. W.Va.), and lodged a proposed Consent Decree with both courts. The Northern District Court entered the Consent Decree on October 12, 2011. The Southern District Court entered the Consent Decree February 10, 2012. A list of all bond forfeited sites at issue in all four suits is attached to the Consent Decree as Attachment A.

The Consent Decree resolves all four suits filed by the Plaintiffs regarding bond forfeited sites. The Consent Decree requires DEP to obtain WV/NPDES permits for all 21 bond forfeiture sites cited in the initial litigation by September 1, 2011. Thereafter, DEP will issue draft WV/NPDES permits for 50 additional sites by the end of each calendar year, beginning in 2012. The Consent Decree requires DEP to issue draft WV/NPDES permits for all bond forfeited sites listed in Attachment A to the Consent

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Decree by December 31, 2015. Thereafter, the DEP shall exercise its best judgment on the timing of issuance of draft permits for sites forfeited after the execution of the consent decree. As required by the Consent Decree on July 2, 2012 DEP submitted a Final Treatment Cost Report to Plaintiffs and SRFAC, in which DEP determined the capital cost and annual operating and maintenance costs for water discharges from each bond forfeiture site to meet applicable water quality based effluent limitations. The DEP estimates these costs will amount to \$35.5 million for one-time capital construction costs and over \$6 million in annual operations and maintenance costs.

2. A third case presents potential for future litigation, should the legislature not adequately fund the Fund and SRWTF. *West Virginia Highlands Conservancy v. Secretary Salazar, DOI*, Civil Action No. 2:00-1062 (S.D. W.Va.). The West Virginia Highlands Conservancy (WVHC) had filed a motion with the U.S. District Court for the Southern District of West Virginia to reopen the case and schedule further proceedings on the grounds that the recommendations of the Special Reclamation Advisory Council were not being followed with regard to funding the Special Reclamation Fund. Based upon the Legislature's extension of funding through the Continuing and Temporary taxes, the case was placed on the court's inactive docket as of May 2008; however, the court allowed the possibility of a renewed motion if the Legislature does not continue to provide sufficient monies for the Fund to remain solvent.

In March 2011, the WVHC moved once again to have the litigation reopened alleging continuing problems with the Fund. A status conference was held on August 5, and the court ordered the filing of a joint status report. On August 25, 2011, the WVHC and the Defendants filed a joint status report with the court. The WVHC stated that the court should not delay reopening the case until the new actuarial report and Advisory Council recommendations are issued, whereas the Defendants recommended that it was premature for the court to reopen this matter prior to the close of the 2012 legislative session.

On March 30, 2012, a status conference call was conducted by the Court. In light of the enactment of Senate Bill 579 that increased the special reclamation tax from 14.4 cents to 27.9 cents per ton of clean coal mined, the Plaintiff acknowledged that it would move to

withdraw its Second Motion to reopen and refile it to address the changed circumstances that have occurred since the filing of its motion to reopen.

On April 2, 2012, the WVHC filed its Motion to withdraw its Second Motion to reopen this case with the Court. On August 5, 2012, the Court issued an Order granting the Plaintiff's Motion to withdraw its Second Motion. In addition, the Court granted the WVHC leave to file an additional motion to explain deficiencies that remain, notwithstanding the recent revenue increase in the Special Reclamation Fund. This case remains open, so the District Court can address any issue that may arise regarding the State's ABS.

Study Issues

1. Consensus Coal Production Forecast for West Virginia: 2014 Update by Christine M. Risch and Dr. Jennifer Shand from the Center for Business and Economic Research at Marshall University.

The West Virginia Consensus Coal Production Forecast is a combined production forecast comprised of four component forecasts. A consensus approach to forecasting seeks the "wisdom of crowds" in producing an expectation for output from the coal industry. The Consensus Forecast is used in planning analysis to provide the best expectation of tax to be collected for mandatory reclamation activities conducted through the Special Reclamation Fund and the Special Reclamation Water Trust Fund.

The 2014 West Virginia Consensus Coal Forecast figures are lower than the 2013 Consensus. A primary reason for this is inclusion of final 2012 supply and demand data in forecasting models, which shifted projections of future production downward. In addition, expectations of more rapidly declining productivity in Appalachia, particularly in Central Appalachia, caused EIA to lower projections for both Northern and Central Appalachian coal production and to raise projections for Interior coal production. The AEO2014 also projects lower prices for Appalachian coal compared to AEO2013 due to lower capacity utilization at existing mines. As the EIA forecast has the largest assigned weight of all the forecasts used to construct the Consensus, its assumptions significantly influence forecast production levels.

2. Enhancing AMDzine with Selenium and Aluminum treatment options by Dr. Paul Ziemkiewicz of West Virginia University Water Research Institute.

The WVDEP is required to obtain National Pollutant Discharge Elimination System (NPDES) permits for water discharges from bond forfeited mine sites throughout West Virginia. OSR is currently treating many of these sites to achieve circumneutral pH and metal removal but will need to upgrade treatment systems to accommodate discharge water quality aluminum (Al) standards of 0.75 and 0.087 milligrams per liter (mg/L) for warm water and trout waters respectively. Water quality data from OSR's current acid mine drainage (AMD) treatment systems indicate inconsistent compliance with those standards. The objective of the Aluminum Removal Study conducted by WVWRI in 2013 was to identify a low cost method for upgrading existing OSR treatment sites to achieve compliance with aluminum standards. In addition to the challenges of treating typical AMD related parameters selenium contamination has become a common problem in coal mining related areas as well, particularly in the southern coal fields. With the adoption of the 5 µg/L selenium discharge limit for coal mines in West Virginia, selenium treatment may be needed at many WVDEP mine drainage treatment facilities. At the present time, however, there is no tool available to assist WVDEP in identifying, evaluating, and comparing different selenium treatment technologies from a treatment effectiveness and cost efficiency perspective.

AMDzine was developed to aid the coal industry and government users in selecting a multi-unit treatment sequence for an AMD treatment facility from a host of active, semi-active and passive treatment technologies. WVDEP's Office of Special Reclamation has used AMDzine for designing and costing treatment systems to meet the more stringent effluent requirements under their NPDES permits. Thus it's appropriate and desirable for WVDEP to incorporate, into AMDzine, the low level aluminum removal technology identified in the previous study and have selenium treatment integrated into AMDzine as well.

The purpose of this project is to update AMDzine through incorporation of a low level aluminum treatment module and selenium treatment options. The final product of the project will be a new and improved AMDzine program that can be used to aid users

in selection of technologies for AMD and selenium treatment based on suitability of technology and cost efficiency.

3. Alternative Enforcement Evaluation by DEP.

The DEP has begun to re-examine previous bond forfeitures to determine whether there are any persons or entities whom may have liability for some or all of the Special Reclamation Fund's reclamation and water treatment costs from whom the DEP could pursue cost recovery. Initially, the DEP has identified the twenty largest Special Reclamation liabilities and referred these to OSM for assistance in investigating and identifying persons who controlled the companies which forfeited these bonds. OSM has provided the DEP with preliminary results for the first two of its investigations. The DEP has assigned legal counsel from its Office of Legal Services to review these preliminary investigations to determine whether any person/entity identified is worth pursuing. As investigations are conducted, the DEP will also be providing feedback to OSM to help OSM perform work that will be of the greatest value to the DEP.

The DEP also monitors and participates in bankruptcy proceedings of permit holders to, among other things, reduce or avoid revocation of permits that have reclamation liabilities in excess of the bond amount. By participating in a bankruptcy proceeding, DEP is sometimes able to encourage/facilitate the transfer (to a capable party) of sites with reclamation liability in excess of the bond amount. Other agency efforts in bankruptcy proceedings include filing and pursuing claims for reclamation costs and penalties, objecting to proposed sales or abandonments structured to avoid reclamation liability, collecting bonds and seeking recovery of reclamation costs, objecting to plans filed by debtors, persisting in informing those involved in the proceeding that a debtor must comply with environmental laws, and continuing to enforce environmental laws through the exercise of police powers, notwithstanding the bankruptcy "automatic stay".

The bankruptcy cases the DEP has been engaged in during 2014 includes the Appalachian Fuels bankruptcy and the Cheyenne Sales bankruptcy. Appalachian Fuels consisted of 50 permits. Of these 50 permits the DEP obtained reclamation responsibility

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for 7 while the remaining permits were absorbed by other operators due, in large part, to DEP personnel facilitating the transfer of these permits. The DEP did hire outside council to assist with the recovery of penalties and excess reclamation cost associated with 3 of the seven permits. To date the DEP has paid \$321,527.88 out of the Fund for attorney fees pertaining to this particular case and has recently been awarded \$2.7 million. The Cheyenne Sales bankruptcy included three permits. The DEP Office of Legal Services (OLS) obtained an administrative expense award in the amount of \$40,559.25 which was entered April 4, 2014 by the U.S. Bankruptcy Court for the Northern District of WV. It is noted the administrative expense award is in addition to the bonds for the revoked permits and was made based upon a demand by OLS for penalties in the original amount of \$5,307,970.48.

Special Reclamation Fund Advisory Council Recommendations to the Legislature

Based upon conclusions drawn from information included in this report, the Council makes the following recommendations to the Legislature:

The Council recommends that the present 12.9 cent per ton tax dedicated to the Fund remain in force and that the tax dedicated to the SRWTF will remain at 15 cents per ton. The Council will have a new study done this year. The Council further recommends that the State Legislature form a panel to examine the elements of our State code that result in these uncontrolled liabilities, how other states deal with such issues and finally to propose a State legislative initiative to rationalize water quality regulation to meet the conditions of the Federal Clean Water Act while adding rationality and certainty to the process.

The Council recommends that the Legislature continue to examine the implications of the recent court rulings and subsequent lawsuit settlements on the Special Reclamation Fund, Abandoned Mine Lands, and voluntary efforts by citizen-led watershed groups to address historic mining-reclamation related liabilities. The Council further recommends that the Legislature examine the mine reclamation and bonding programs of other states and as implemented in Tennessee by the federal

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Office of Surface Mining in order to determine if the statute and regulations creating the Fund and SRWTF in West Virginia have inappropriately structured SMCRA to assume long-term CWA liabilities. The Council further recommends the Legislature examine the separate and distinct authorities of the Clean Water Act (CWA) in assessing the eligibility of future forfeitures for transfer of liabilities to the SRWTF. The Council is concerned about default transfer of water treatment liability to the SRWTF when opportunities exist to pursue responsible parties under the CWA per the requirements of an NPDES (CWA Section 402) permit.

As a partial alternative to fully funding the SRWTF through a future increase in the tax, the Special Reclamation Fund Advisory Council recommends that, if possible, the Legislature commit a portion of excess coal severance tax or other revenues to the SRWTF, so it can begin to build value and help offset the cost of future water reclamation and ongoing treatment.

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Special Reclamation Fund Advisory Council
Annual Report to the Legislature
January 13, 2015



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Appendices for 2014 SRF Advisory Council Annual Report
(All Appendices as of 9-30-14)

A. OSR Graphs:

Total of Land and Water Permits Scheduled by Quarter
Land Permits To Be Contracted
Land Liabilities To Be Contracted
Permits Forfeited Since 6-30-01
Reclamation Projects Started Since 6-30-01
Contract Dollars Encumbered
Cash Balance
Total Revenue
Revenue Collected by Source: Bonds, Civil Penalties, Tax

B. OSR Estimated Land Liability-WQ Capital Dollars vs. Contract Amount

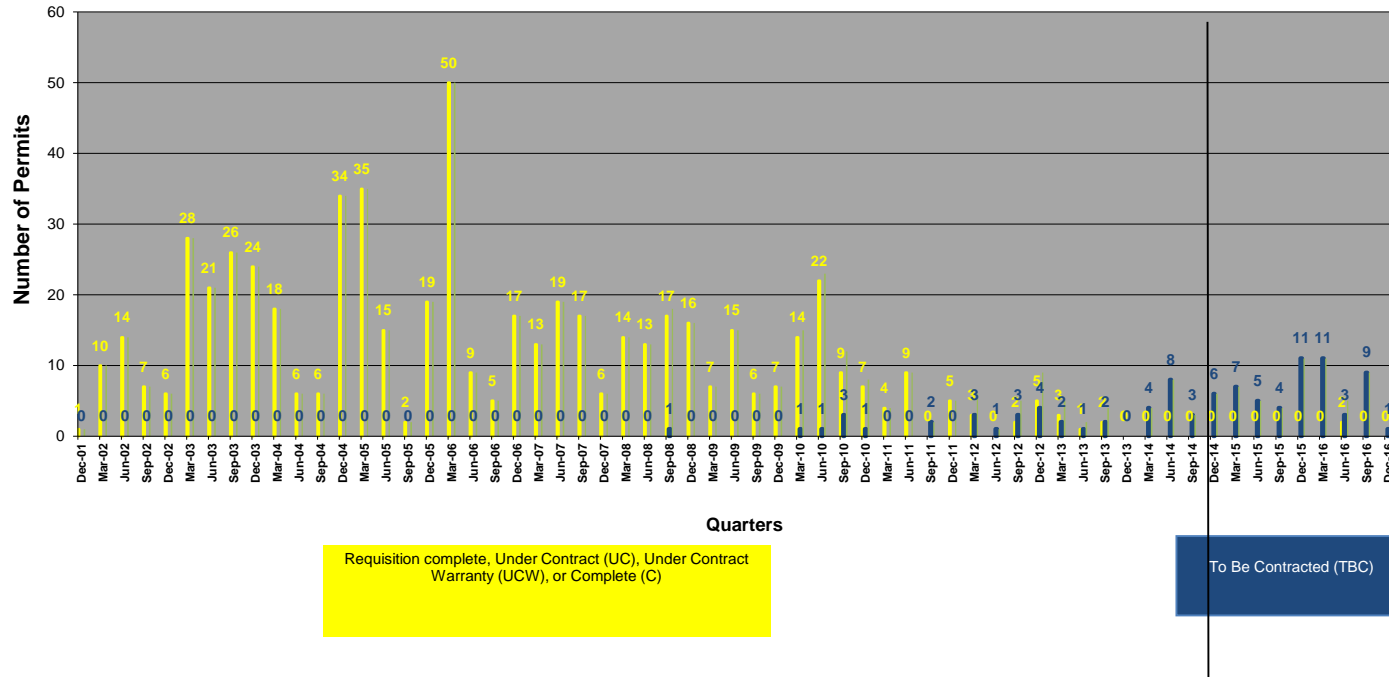
C. Reports Commissioned by the Council

Consensus Coal Production Forecast for West Virginia: 2014
By Christine M. Risch and Dr. Jennifer Shand from the Center for
Business & Economic Research
Marshall University, August 15, 2014

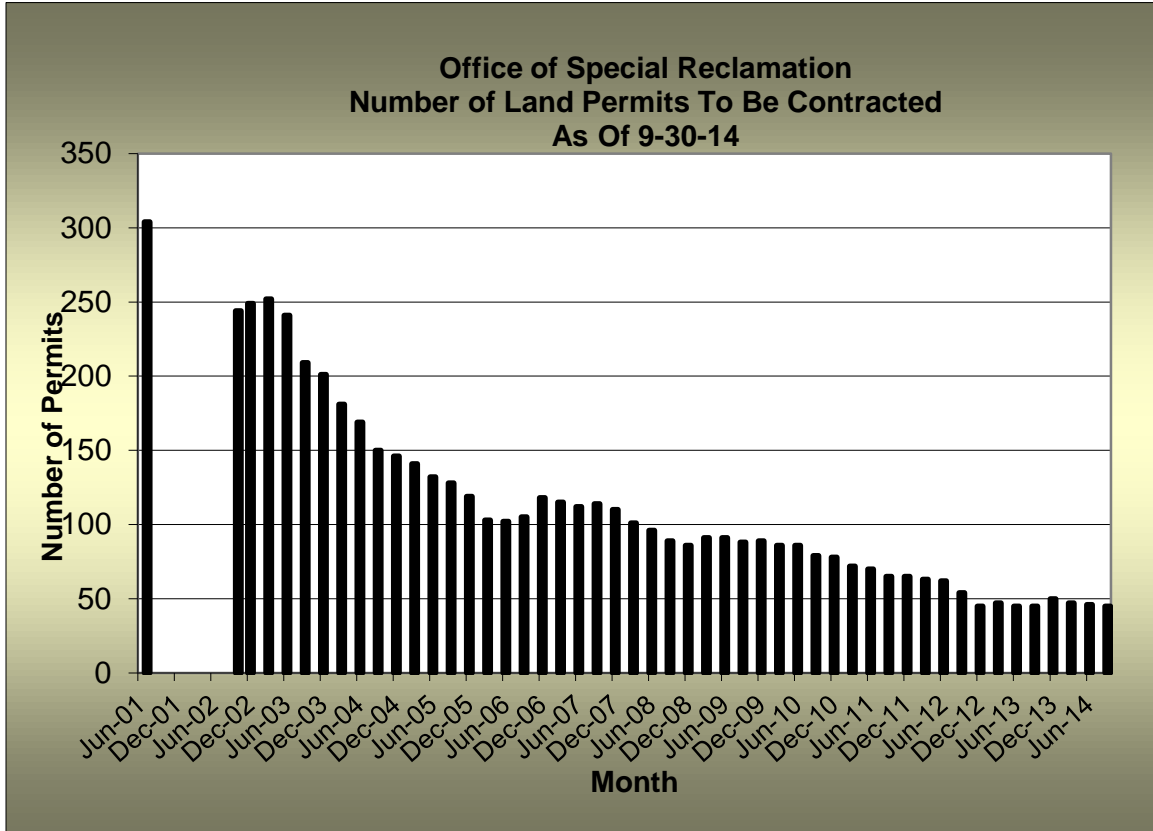
Appendix A

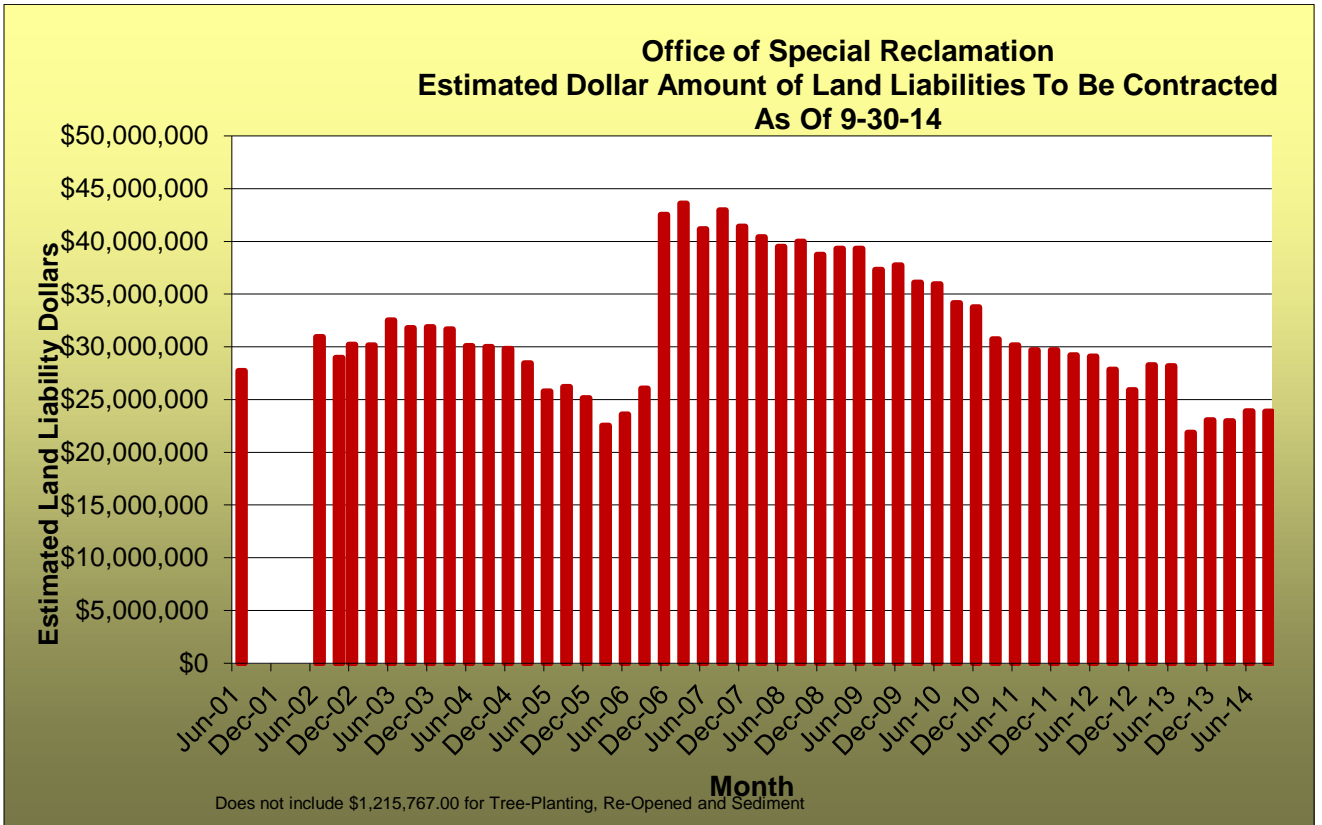
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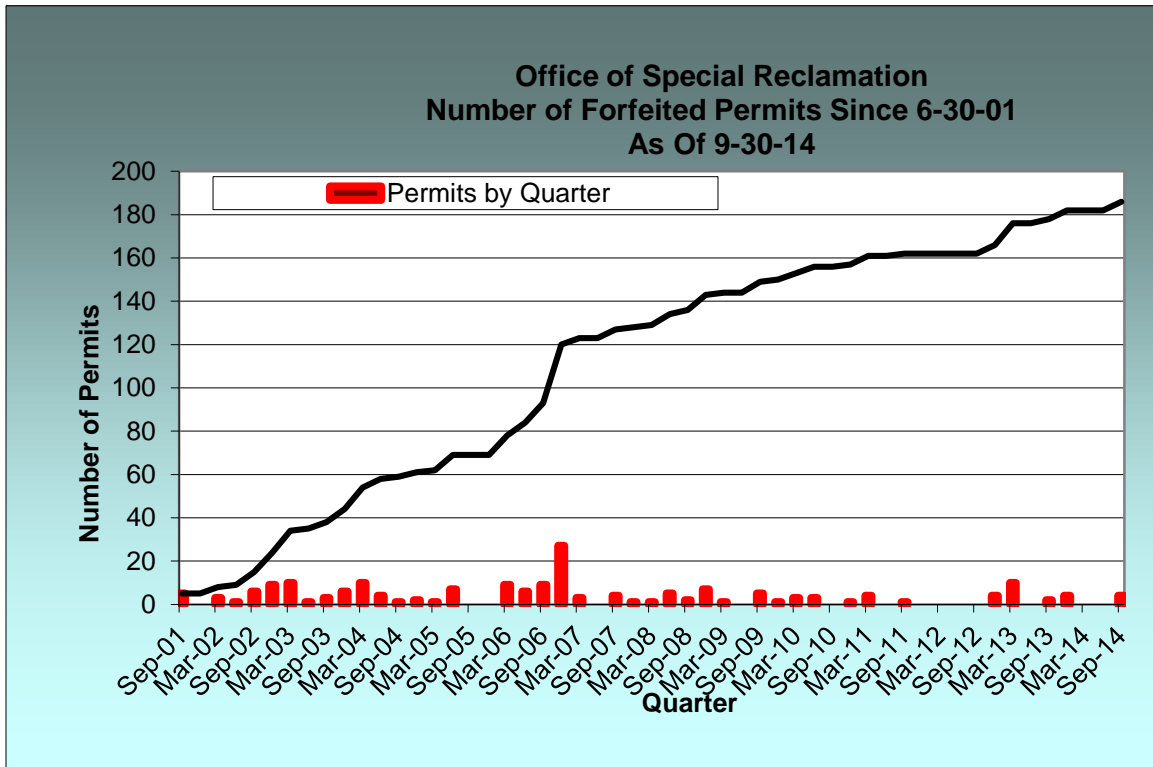
Total of Land and Water Permits Scheduled by Quarter
As Of September 30, 2014

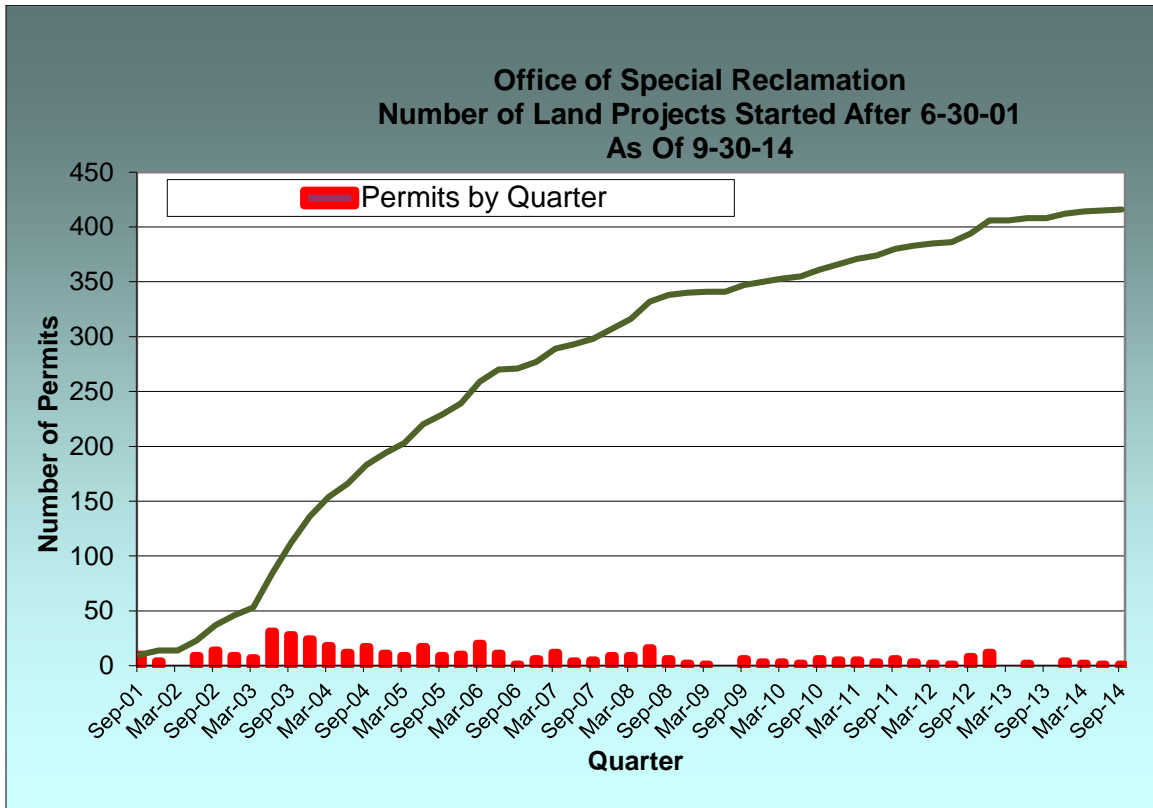


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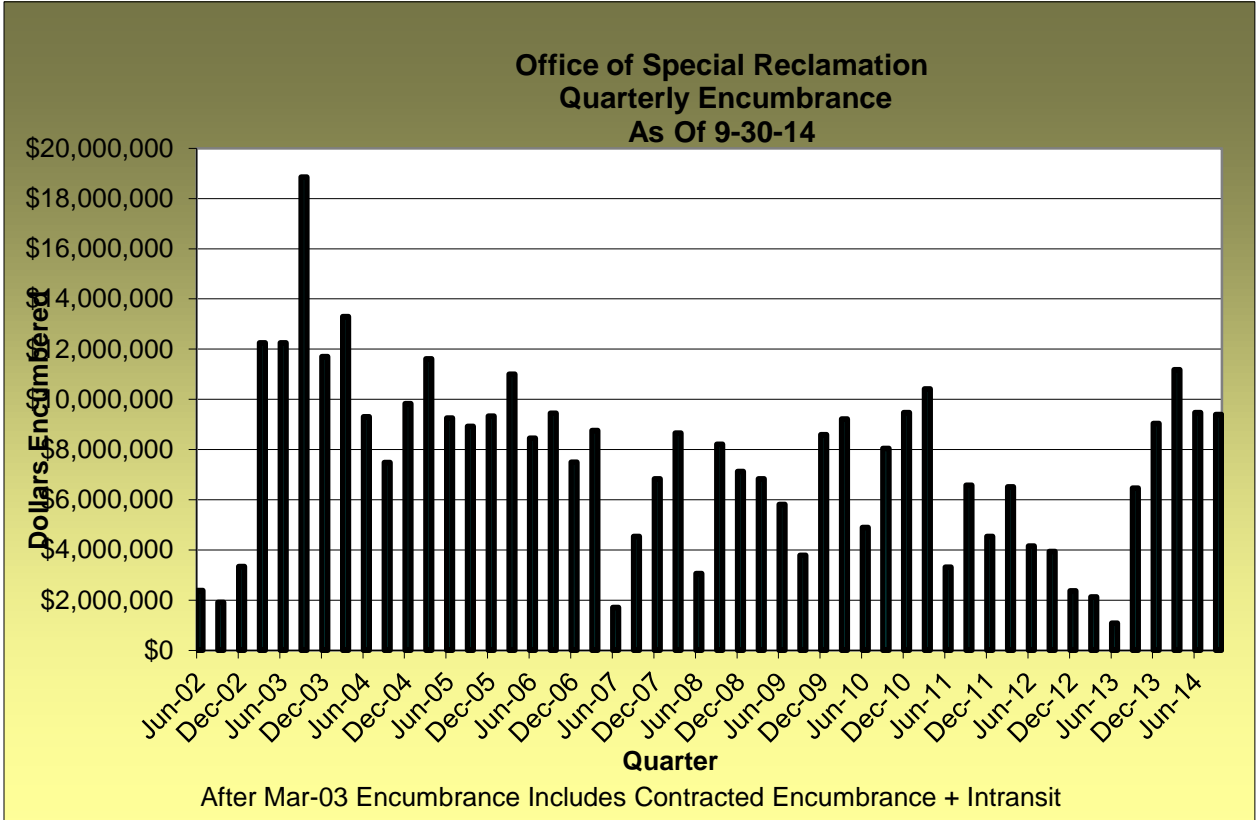


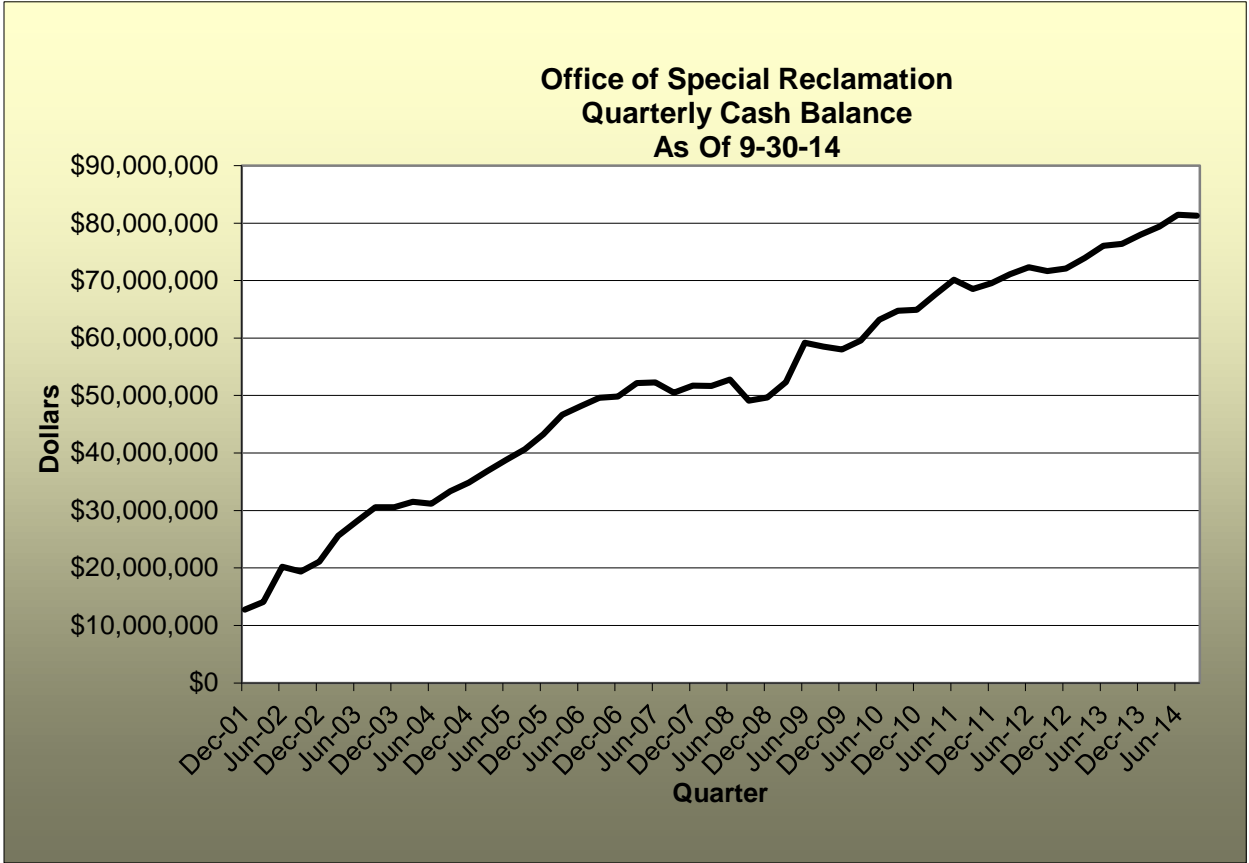


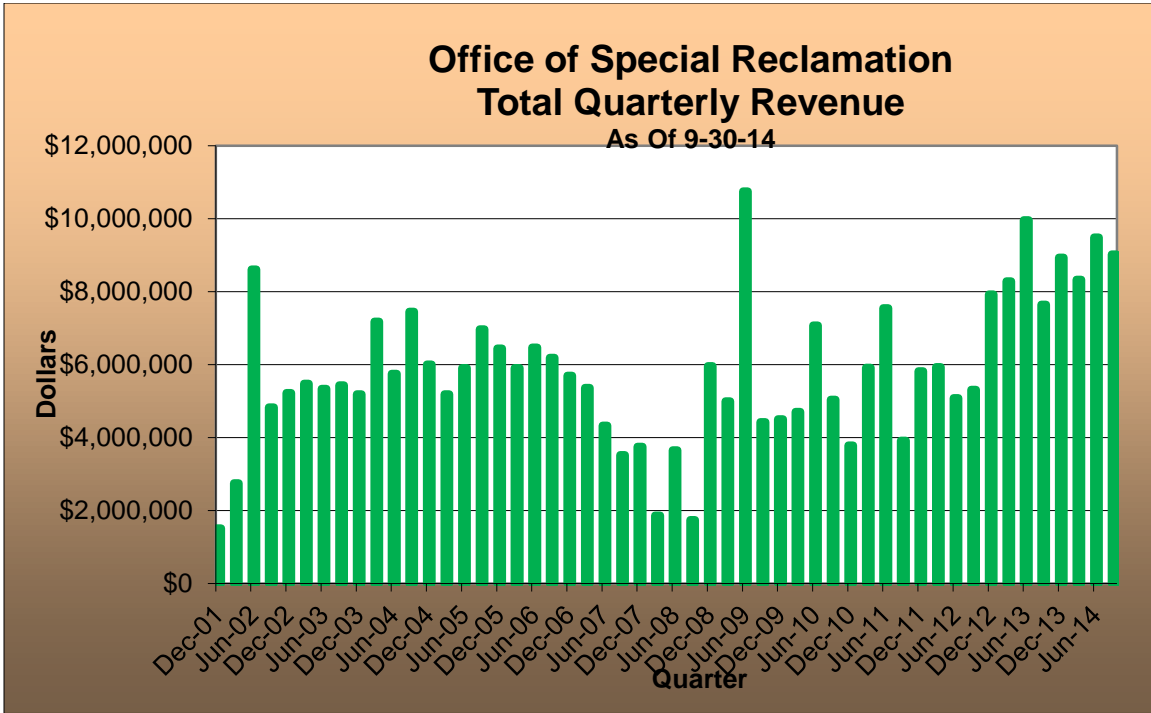


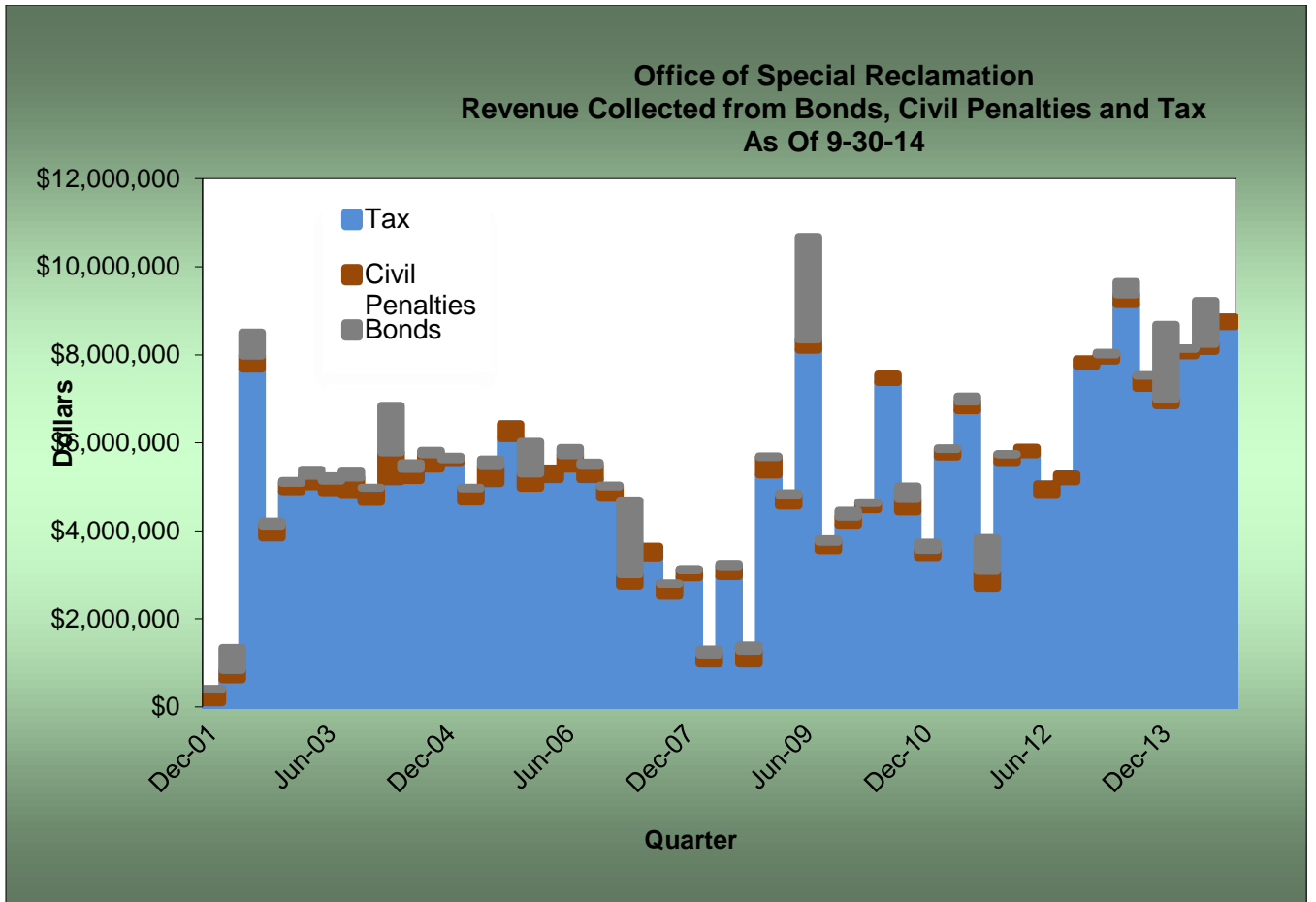


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Appendix B

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**OSR Land Liability vs. Land Contract Amount as of 09-30-14
For Contracts Awarded After 1-1-2000**

REC START DATE	OFFICE	PERMIT	LAND STATUS	LIAB REPT POST DATE	EST LIABILITY	LAND CONTRACT AMOUNT
7/27/2000	N	EM-118	C	8/22/2001	\$212,200.00	\$298,585.47
7/28/2000	S	149-79	C	5/22/2001	\$262,140.00	\$171,553.80
12/12/2000	S	EM-133	C	5/22/2001	\$150,285.00	\$344,513.00
12/12/2000	S	P-731	C	5/22/2001	\$213,724.00	\$416,210.00
12/13/2000	S	P-751	C	4/23/2001	\$269,401.00	\$321,755.00
12/13/2000	S	R-734	C	5/22/2001	\$367,048.00	\$358,431.00
1/22/2001	S	S-3003-92	C	5/22/2001	\$442,000.00	\$737,054.40
1/30/2001	N	S-68-82	C	1/31/1996	\$300,000.00	\$146,309.70
2/26/2001	N	S-1032-86	C	4/20/1993	\$39,400.00	\$35,780.00
8/23/2001	S	D-108-82	C	5/10/1996	\$3,770.00	\$24,920.18
8/24/2001	S	U-4005-90	C	10/3/2003	\$7,700.00	\$2,490.00
9/19/2001	S	U-53-85	C	10/8/2003	\$90,800.00	\$128,002.06
10/25/2001	S	U-4012-86	C	4/10/2001	\$224,637.00	\$310,746.50
10/25/2001	S	U-4029-89	C	5/19/1997	\$118,510.00	\$108,841.20
11/28/2001	N	S-1006-92	C	11/17/1999	\$30,000.00	\$89,910.00
1/16/2002	N	U-1012-93	C	6/9/2000	\$40,000.00	\$67,096.90
4/5/2002	N	U-125-83	C	7/12/1996	\$105,000.00	\$149,168.65
5/1/2002	C	O-69-82	C	9/15/2003	\$14,720.00	\$14,720.00
5/2/2002	C	U-140-82	C	9/15/2003	\$11,745.00	\$11,745.00
5/2/2002	C	U-5027-86	C	9/16/2003	\$6,605.00	\$2,925.00
5/19/2002	C	UO-353	C	9/16/2003	\$10,075.00	\$10,075.00
6/24/2002	N	U-2037-86	C	2/29/2000	\$72,000.00	\$48,921.00
7/2/2002	S	S-3024-87	C	10/15/1999	\$38,000.00	\$67,396.00
7/2/2002	S	U-3003-89	C	10/15/1999	\$30,000.00	\$66,978.00
7/2/2002	S	U-3023-87	C	10/15/1999	\$22,000.00	\$14,600.00
7/3/2002	C	U-5035-87	SSR	4/23/1999	\$123,000.00	\$156,900.00
7/3/2002	C	S-5034-87	SSR	4/23/1999	\$72,000.00	\$73,900.00
8/14/2002	N	O-2044-88	C	6/9/2000	\$297,000.00	\$235,592.80
8/14/2002	N	S-2021-87	C	9/29/2000	\$50,000.00	\$10,750.00
8/14/2002	N	S-2052-86	C	11/8/1999	\$60,000.00	\$49,200.00
8/14/2002	N	U-2005-88	C	11/8/1999	\$70,000.00	\$109,830.00
8/14/2002	N	S-2006-93	C	10/15/1999	\$37,500.00	\$54,140.00
9/16/2002	S	S-96-85	C		\$50,000.00	\$162,100.00
9/16/2002	S	U-3046-87	C	4/17/2001	\$225,000.00	\$233,900.00
10/31/2002	S	U-3042-89	C	3/22/2002	\$130,000.00	\$130,565.00
10/31/2002	S	S-113-85	C	5/28/2001	\$40,000.00	\$9,100.00
10/31/2002	S	U-3031-93	C	5/29/2001	\$201,000.00	\$146,000.00
10/31/2002	S	U-4011-88	C	2/22/1999	\$110,700.00	\$115,022.50
11/22/2002	S	O-36-84	C	8/25/2000	\$49,378.00	\$183,690.00
11/22/2002	S	R-7-81	C	8/25/2000	\$615,020.00	\$783,862.00
12/4/2002	S	U-4011-90	C	10/15/1999	\$3,500.00	\$7,210.00
1/30/2003	S	U-42-85	C	10/15/1999	\$8,200.00	\$12,872.50

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2/20/2003	S	S-3035-87	C	10/15/1999	\$178,500.00	\$637,700.00
2/20/2003	S	U-3036-87	C	10/15/1999	\$42,000.00	\$357,500.00
2/24/2003	C	S-5046-88	C	10/15/1999	\$60,500.00	\$48,185.00
4/15/2003	S	UO-727	C	12/12/1997	\$18,720.00	\$13,459.50
4/15/2003	S	UO-252	C	5/22/2003	\$6,655.00	\$4,758.46
4/18/2003	S	U-107-83	C	5/26/2000	\$133,580.00	\$249,700.00
4/18/2003	S	U-3066-88	C	5/26/2000	\$83,275.00	\$378,185.00
4/23/2003	S	EM-71	C	6/30/1998	\$14,365.00	\$12,100.16
4/23/2003	S	UO-623	C	10/15/1999	\$10,500.00	\$8,856.34
4/30/2003	S	S-682	C	5/26/2000	\$27,735.00	\$40,400.00
5/1/2003	N	S-1024-88	C	3/1/2000	\$97,600.00	\$92,937.00
5/1/2003	S	S-3050-86	C	5/26/2000	\$160,492.00	\$177,000.00
5/1/2003	S	S-65-76	C	5/26/2000	\$24,842.00	\$134,800.00
5/15/2003	S	D-125-82	C	5/26/2000	\$79,360.00	\$191,311.75
5/15/2003	S	U-3020-86	C	5/26/2000	\$9,480.00	\$71,500.00
5/15/2003	S	UO-571	C	5/26/2000	\$19,775.00	\$26,800.00
5/20/2003	S	S-3011-88	C	5/26/2000	\$89,830.00	\$130,900.00
5/22/2003	S	32-81	C	5/26/2000	\$71,500.00	\$105,770.00
5/22/2003	S	U-3074-87	C	5/26/2000	\$176,760.00	\$517,520.00
6/5/2003	S	56-81	C	5/26/2000	\$173,992.00	\$319,245.00
6/5/2003	S	R-3078-86	C	5/26/2000	\$130,104.00	\$237,536.00
6/10/2003	S	U-3017-87	C	5/26/2000	\$77,737.00	\$157,231.85
6/19/2003	S	U-3078-87	C	10/15/1999	\$55,000.00	\$62,600.00
6/19/2003	S	S-33-81	C	10/15/1999	\$58,000.00	\$68,500.00
6/19/2003	S	D-32-81	C	5/26/2000	\$100,090.00	\$88,000.00
6/19/2003	S	O-103-83	C	5/26/2000	\$54,605.00	\$109,125.00
7/29/2003	S	S-60-83	C	5/26/2000	\$99,112.50	\$74,750.00
8/6/2003	S	S-176-75	C	5/26/2000	\$41,450.00	\$76,510.00
8/6/2003	S	S-65-85	C	5/26/2000	\$502,360.00	\$944,770.00
8/13/2003	S	U-171-83	C	8/30/2002	\$40,000.00	\$70,839.90
8/13/2003	S	U-50-85	C	8/30/2002	\$36,000.00	\$41,496.40
8/14/2003	S	S-3020-88	C		\$15,000.00	\$27,467.50
8/14/2003	S	D-5-82	C	5/14/2003	\$18,760.00	\$11,007.50
9/2/2003	N	D-75-82	C	11/8/2001	\$55,300.00	\$115,000.00
9/2/2003	N	S-2002-92	C	11/26/2001	\$164,600.00	\$186,380.00
9/2/2003	N	U-1041-91	C	11/26/2001	\$21,800.00	\$77,300.00
9/12/2003	N	S-2009-89	C	8/3/2001	\$75,000.00	\$121,230.00
9/12/2003	S	S-90-82	C	5/26/2000	\$63,200.00	\$94,300.00
9/12/2003	S	U-3046-88	C	5/26/2000	\$709,800.00	\$1,145,450.00
9/18/2003	C	U-5006-95	C	5/22/2001	\$62,000.00	\$94,635.00
9/19/2003	S	D-10-81	C	9/10/2003	\$28,200.00	\$46,365.00
9/29/2003	S	S-99-83	C	5/26/2000	\$46,950.00	\$142,140.00
9/29/2003	S	U-40-85	C	5/26/2000	\$136,505.00	\$255,500.00
10/8/2003	S	O-3077-87	C	5/6/2003	\$49,335.00	\$27,750.00
10/14/2003	S	S-119-85	C	11/24/2003	\$85,500.00	\$66,600.00
10/17/2003	S	S-3009-89	C	5/26/2000	\$118,040.00	\$220,160.00
10/17/2003	S	S-3012-93	C	5/26/2000	\$20,975.00	\$71,684.00
10/17/2003	S	S-3070-88	C	5/26/2000	\$62,450.00	\$127,624.00
10/20/2003	S	U-3006-87	C	5/28/2003	\$114,000.00	\$72,900.00
10/31/2003	C	U-82-84	C	10/15/1999	\$10,400.00	\$13,597.50
11/12/2003	C	U-1-85	C	10/15/1999	\$36,000.00	\$21,659.88

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11/13/2003	C	UO-406	C	2/3/1999	\$32,000.00	\$23,312.50
12/24/2003	N	S-1028-86	C	10/15/1999	\$42,000.00	\$40,800.00
12/24/2003	N	S-62-85	C	10/15/1999	\$35,900.00	\$99,180.00
12/24/2003	S	O-104-83	C	5/26/2000	\$122,750.00	\$94,254.90
12/24/2003	S	O-67-82	C	5/26/2000	\$23,005.00	\$72,566.10
12/24/2003	S	U-22-85	C	11/20/2002	\$382,360.00	\$449,007.49
1/9/2004	S	UO-694	C	10/15/1999	\$54,300.00	\$139,000.00
1/9/2004	S	UO-383	C	3/12/1999	\$153,340.00	\$255,500.00
2/5/2004	S	U-4012-94	C	3/10/2003	\$180,000.00	\$119,801.00
2/5/2004	S	U-4017-91	C	3/10/2003	\$37,466.00	\$40,201.00
2/5/2004	S	U-85-83	C	10/15/1999	\$53,940.00	\$152,201.00
2/5/2004	S	UO-439	C	10/15/1999	\$100,380.00	\$155,501.00
2/23/2004	S	S-3076-86	C	5/26/2000	\$354,915.00	\$749,003.00
3/2/2004	S	U-231-83	C	4/2/1999	\$24,700.00	\$110,835.00
3/2/2004	S	UO-155	C	5/13/1996	\$89,573.00	\$389,389.00
3/4/2004	C	P-654	C	6/5/2002	\$171,000.00	\$149,700.00
3/10/2004	S	R-721	C	4/14/2004	\$40,000.00	\$27,345.00
3/30/2004	N	O-46-84	C	6/9/2000	\$90,000.00	\$268,350.00
3/30/2004	N	O-46-85	C	6/9/2000	\$56,000.00	\$144,720.00
4/12/2004	S	S-3031-87	C	5/20/1996	\$18,200.00	\$20,615.00
4/26/2004	S	S-3019-87	C		\$20,000.00	\$49,140.00
5/4/2004	N	R-722	C	10/15/1999	\$5,400.00	\$3,620.00
5/4/2004	N	U-138-83	C	10/15/1999	\$265,370.00	\$844,390.00
5/24/2004	N	UO-380	C	6/9/2000	\$50,000.00	\$69,410.00
7/20/2004	S	D-60-82	C	5/20/1996	\$30,000.00	\$91,450.00
7/21/2004	N	S-24-83	C	11/8/2001	\$127,000.00	\$53,767.50
7/22/2004	S	13-79	C		\$25,000.00	\$46,750.00
8/30/2004	C	O-5059-86	C	4/10/2001	\$65,436.00	\$47,050.00
9/3/2004	C	U-6012-88	C	5/16/2003	\$25,025.00	\$24,573.00
9/4/2004	C	O-40-82	C	5/9/2003	\$10,000.00	\$54,700.00
9/4/2004	C	O-45-82	C	5/9/2003	\$24,315.00	\$57,700.00
11/12/2004	C	S-94-82	C	6/5/2002	\$200,000.00	\$91,502.00
11/12/2004	S	U-4013-88	C	4/23/2003	\$211,211.00	\$158,700.00
11/24/2004	S	U-26-83	C	3/22/2001	\$132,370.00	\$197,360.00
2/4/2005	S	S-3016-92	C	3/29/2004	\$1,185,363.40	\$1,191,550.00
3/29/2005	S	O-58-83	C	3/22/2002	\$1,900,000.00	\$2,373,659.00
5/12/2005	S	EM-116	C	4/23/2003	\$465,000.00	\$378,000.00
5/12/2005	S	U-4017-89	C	5/28/2003	\$133,700.00	\$108,000.00
5/12/2005	S	U-4002-94	C	4/10/2001	\$100,958.00	\$210,500.00
5/31/2005	S	U-4018-86	C	10/15/1999	\$173,710.00	\$207,316.00
6/8/2005	S	U-4027-88	C	4/10/2001	\$274,588.00	\$250,582.00
9/22/2005	S	S-3010-98	C	2/10/2004	\$794,257.10	\$370,900.00
12/29/2005	S	S-35-81	C	5/20/1996	\$67,200.00	\$122,600.00
1/3/2006	S	S-3028-87	C		\$35,000.00	\$138,000.00
1/3/2006	S	U-4020-87	C	6/28/2000	\$53,690.00	\$64,650.00
1/16/2006	S	R-4030-86	C		\$469,240.00	\$921,430.19
1/20/2006	S	U-3040-87	C	4/12/2001	\$368,410.00	\$610,470.00
1/20/2006	S	U-3045-86	C	5/7/2003	\$376,722.00	\$356,000.00
2/14/2006	S	S-3055-88	C	5/29/1996	\$257,774.00	\$254,860.00
2/14/2006	S	U-69-85	C	5/29/1996	\$140,000.00	\$217,400.00
3/13/2006	N	U-1012-93	C	6/9/2000	\$40,000.00	\$50,604.80

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4/14/2006	C	S-6029-86	C		\$50,000.00	\$224,000.00
5/4/2006	S	U-154-83	C	10/15/1999	\$54,635.00	\$188,575.00
6/28/2006	C	U-5069-87	C	5/26/2000	\$151,000.00	\$186,750.00
1/8/2007	S	U-3053-88	C	5/27/1999	\$33,375.00	\$164,625.00
1/12/2007	S	U-3010-87	C	6/27/2006	\$271,500.00	\$232,140.00
1/17/2007	S	U-3003-86	C	6/16/2006	\$157,488.00	\$208,965.00
1/17/2007	S	UO-223	C	6/16/2006	\$218,120.00	\$199,035.00
3/19/2007	N	S-29-80	C	10/15/1999	\$49,500.00	\$26,200.00
3/19/2007	N	S-41-84	C	10/15/1999	\$35,900.00	\$50,400.00
3/19/2007	N	S-55-85	C	10/15/1999	\$51,600.00	\$175,300.00
3/19/2007	N	S-72-84	C	10/15/1999	\$138,300.00	\$124,510.00
4/13/2007	N	S-2023-92	C	12/13/2006	\$2,620,101.00	\$1,202,392.00
5/17/2007	S	D-73-82	C	5/9/2001	\$117,200.00	\$131,999.00
11/5/2007	S	P-664	C	8/31/2005	\$177,000.00	\$114,741.00
1/8/2008	S	O-172-83	C	2/10/2004	\$111,000.00	\$37,900.00
2/1/2008	S	I-544	C	1/30/2001	\$5,000.00	\$34,000.00
2/1/2008	S	O-20-85	C	11/6/2006	\$34,580.00	\$31,546.00
2/20/2008	C	O-16-82	C		\$50,000.00	\$138,600.00
2/20/2008	C	O-16-85	C		\$50,000.00	\$583,680.00
3/24/2008	S	U-4019-92	C	9/1/1998	\$500,000.00	\$96,000.00
3/26/2008	S	S-3031-90	C	3/29/2007	\$602,000.00	\$241,500.00
4/10/2008	S	187-74	C	10/15/1999	\$192,810.00	\$396,800.00
4/21/2008	S	P-61-83	C	10/15/1999	\$49,300.00	\$62,925.00
6/26/2008	S	S-23-77	C	10/15/1999	\$934,080.00	\$1,571,650.00
6/30/2008	N	S-1012-87	C	10/15/1999	\$92,900.00	\$158,150.00
6/30/2008	N	S-20-83	C	10/15/1999	\$39,700.00	\$31,160.00
7/10/2008	S	O-169-83	C	10/15/1999	\$60,800.00	\$99,870.00
7/10/2008	S	U-225-83	C		\$76,800.00	\$354,730.00
8/7/2008	S	S-19-85	C	1/26/2004	\$101,500.00	\$47,050.00
11/26/2008	C	120-79	C		\$30,000.00	\$330,694.00
7/22/2009	N	S-2003-03	UCW	3/29/2007	\$2,096,350.00	\$820,111.00
10/15/2009	S	O-3012-07	C	3/25/2009	\$337,820.00	\$117,300.00
1/26/2010	N	S-2009-01	UCW	8/31/2006	\$2,069,075.00	\$533,000.00
2/9/2010	N	S-1002-99	C	8/31/2006	\$287,610.00	\$151,460.00
5/21/2010	N	S-2018-88	C	12/31/2006	\$864,543.00	\$318,774.00
6/9/2010	N	U-2002-95	C	4/27/2007	\$335,924.00	\$251,909.00
7/22/2010	C	O-6013-88	C	8/27/2003	\$1,355,000.00	\$1,391,557.00
7/22/2010	C	O-6021-89	C	2/26/2003	\$11,400.00	\$25,000.00
7/22/2010	C	S-73-85	C	8/27/2003	\$258,000.00	\$223,500.00
7/22/2010	C	U-6018-86	C	2/26/2003	\$13,000.00	\$24,000.00
8/24/2010	N	U-2010-94	C	12/22/2008	\$136,230.00	\$183,420.00
11/30/2010	N	P-741	UCW	8/4/2004	\$400,000.00	\$326,000.00
1/12/2011	N	S-100-84	UCW	3/29/2007	\$792,000.00	\$1,366,126.00
1/12/2011	N	S-2004-02	C	12/13/2006	\$3,590,402.00	\$2,571,571.00
1/12/2011	N	S-1004-88	UCW	9/10/2003	\$472,500.00	\$369,000.00
1/12/2011	N	S-1019-87	UCW	9/10/2003	\$20,000.00	\$149,000.00
1/12/2011	N	UO-401	C	9/22/2008	\$1,476,730.00	\$644,250.00
5/17/2011	N	S-1005-95	UCW	9/10/2003	\$565,000.00	\$511,405.00
7/22/2011	N	U-2005-97	UCW	1/22/2009	\$131,000.00	\$207,025.00
8/3/2011	C	U-5049-87	C	11/4/2002	\$145,100.00	\$587,554.00
8/3/2011	C	S-41-80	C	6/5/2002	\$156,000.00	\$392,477.00

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11/22/2011	N	U-1008-92	RO	7/29/2003	\$550,000.00	\$228,750.00
3/6/2012	S	S-3016-99	C		\$399,602.00	\$284,450.00
7/16/2012	C	S-34-82	UCW	12/10/2001	\$44,000.00	\$83,710.00
7/31/2012	C	O-5035-88	UCW	11/4/2002	\$216,100.00	\$200,600.00
7/31/2012	C	O-5092-87	UCW	11/4/2002	\$203,800.00	\$747,440.00
7/31/2012	C	U-5018-98	UCW	4/29/2003	\$14,000.00	\$198,360.00
7/31/2012	C	U-5023-97	UCW	4/29/2003	\$231,000.00	\$162,520.00
7/31/2012	C	U-5036-88	UCW	11/4/2002	\$154,400.00	\$69,000.00
7/31/2012	C	U-5085-88	UCW	4/29/2003	\$314,400.00	\$29,080.00
12/3/2012	S	S-3007-89	UCW	10/17/2007	\$283,290.00	\$61,325.00
12/3/2012	S	S-3026-88	UCW	10/17/2007	\$161,840.00	\$21,850.00
12/3/2012	S	S-3027-90	UCW	10/17/2012	\$420,208.00	\$60,800.00
11/4/2013	S	S-5034-87	SSR	4/23/1999	\$72,000.00	\$106,102.00
11/4/2013	S	U-5035-87	SSR	4/23/1999	\$123,000.00	\$70,098.00
2/3/2014	N	D-49-82	UC	6/9/2010	\$722,635.00	\$699,600.00
5/30/2014	N	7-81	UC	6/10/2011	\$273,000.00	\$7,000.00

Total: 211 \$46,633,509.00 \$49,571,027.88
Variance: 6.30%

Note: Excludes 10 permits where the variance exceeds 2 standard deviations under the mean or no Est Liability in database.

Total Unskewed: 194 \$45,906,594.00 \$45,433,555.70
Variance Unskewed: -1.03%

Note: The variance of these 17 permits exceeds 2 standard deviations over the mean.

Increased liability over time, more detailed investigation prior to requisition, general inflation, increased costs for specific goods and services are contributing factors in the variance.

Without these 17 permits, the Estimated Liability vs. Land Contract Amount variance is -1.03%.

Variance = (Contract Amount - Est Liability) / Est Liability

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**OSR WQ Cap vs. Water Contract Amount as of 09-30-14
For Contracts Awarded After 1-1-2000**

DATE WQ CONST STARTED	OFFICE	PERMIT	LAND STATUS	WATER STATUS	LIAB REPT POST DATE	WQ TOTAL CAPITAL DOLLARS	WATER CONTRACT AMOUNT
9/16/2002	S	S-96-85	C	P		\$67,500.00	\$128,240.00
10/17/2002	N	S-26-85	C	ACT		\$398,250.00	\$243,705.23
12/19/2002	N	S-1032-86	C	ACT	4/20/1993	\$364,500.00	\$209,784.66
2/20/2003	N	S-60-84	C	ACT		\$175,500.00	\$282,062.00
4/25/2003	N	EM-32	C	ACT		\$243,000.00	\$168,890.00
5/1/2003	N	S-1024-88	C	ACT	3/1/2000	\$209,250.00	\$173,178.00
5/15/2003	N	176-77	C	ACT	5/26/2000	\$54,000.00	\$312,000.00
5/21/2003	N	S-10-81	C	ACT	7/21/2000	\$452,250.00	\$643,142.22
6/5/2003	S	EM-97	C	ACT	9/16/2003	\$175,500.00	\$341,775.00
6/5/2003	S	R-3078-86	C	ACT	5/26/2000	\$209,250.00	\$91,000.00
6/19/2003	S	D-32-81	C	ACT	5/26/2000	\$209,250.00	\$260,500.00
8/25/2003	N	40-81	C	ACT		\$398,250.00	\$413,962.40
8/27/2003	N	S-1063-86	C	ACT		\$87,750.00	\$324,561.00
9/29/2003	S	U-40-85	C	P	5/26/2000	\$175,500.00	\$89,500.00
10/8/2003	N	S-37-81	C	P		\$364,500.00	\$118,000.00
10/14/2003	N	65-78	C	ACT		\$170,100.00	\$1,142,151.00
10/14/2003	N	S-65-82	C	ACT	7/21/2000	\$315,900.00	\$1,600,000.00
10/14/2003	S	S-119-85	C	P	11/24/2003	\$398,250.00	\$150,000.00
11/4/2003	N	S-17-82	C	ACT	10/15/1999	\$209,250.00	\$589,265.32
11/7/2003	N	UO-519	C	ACT	3/14/2001	\$398,250.00	\$581,592.00
1/22/2004	N	O-1035-87	C	ACT		\$173,677.50	\$406,440.00
1/22/2004	N	O-43-85	C	ACT		\$121,500.00	\$202,975.00
1/22/2004	N	O-86-82	C	ACT	9/24/2003	\$35,572.50	\$35,125.00
2/5/2004	S	U-3055-87	C	P	10/28/2003	\$209,250.00	\$251,300.00
2/5/2004	S	S-86-85	C	ACT	7/24/2000	\$209,250.00	\$467,500.00
6/22/2004	N	S-1087-86	C	P		\$209,250.00	\$97,400.00
7/22/2004	S	19-75	C	P		\$209,250.00	\$116,710.00
8/16/2004	N	S-1030-86	C	P		\$209,250.00	\$87,794.00
8/17/2004	S	U-3083-87	C	P	3/19/1998	\$195,750.00	\$220,161.00
9/8/2004	C	O-1-81	C	ACT	10/26/1998	\$324,000.00	\$499,795.00
10/1/2004	N	S-52-83	C	ACT		\$155,250.00	\$298,745.00
2/10/2005	N	S-61-82	C	ACT		\$121,500.00	\$245,392.00
3/4/2005	N	237-76	C	ACT		\$109,250.00	\$503,239.00
3/4/2005	N	S-1035-86	C	ACT		\$100,000.00	\$449,125.00
5/12/2005	S	R-3-81	C	ACT		\$175,500.00	\$487,750.00
5/17/2005	N	S-1041-89	C	ACT	8/31/2000	\$364,500.00	\$312,985.00
5/24/2005	N	60-79	C	P		\$54,000.00	\$95,980.00
6/8/2005	N	U-2024-87	C	ACT		\$184,997.92	\$348,350.00
12/28/2005	N	S-21-84	C	ACT		\$175,500.00	\$208,543.30
12/29/2005	S	S-35-81	C	P	5/20/1996	\$209,250.00	\$284,400.00
1/3/2006	S	S-3028-87	C	P		\$67,500.00	\$412,280.00
4/14/2006	C	S-6029-86	C	ACT		\$87,750.00	\$2,497,373.00
5/4/2006	N	S-64-83	C	ACT		\$243,000.00	\$316,385.00

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6/7/2006	N	34-81	C	ACT		\$175,500.00	\$297,685.00
6/27/2006	N	D-35-82	TBC	ACT	8/4/2002	\$2,892,400.00	\$2,856,667.00
9/1/2006	N	S-2003-86	C	P		\$364,500.00	\$80,052.50
10/18/2006	S	S-99-83	C	P	5/26/2000	\$95,500.00	\$107,100.00
11/1/2006	S	S-3026-89	C	P	6/29/1998	\$247,800.00	\$420,500.00
11/9/2006	S	O-3086-87	C	P	7/25/2001	\$87,750.00	\$285,500.00
11/9/2006	S	O-43-84	C	ACT	7/25/2001	\$87,750.00	\$276,000.00
12/15/2006	N	65-77	C	P		\$209,250.00	\$308,028.50
12/15/2006	N	S-1009-88	C	P		\$87,750.00	\$159,608.00
5/3/2007	N	U-109-83	C	P		\$209,250.00	\$139,880.00
8/9/2007	N	67-78	C	ACT		\$121,500.00	\$321,000.00
9/21/2007	N	192-77	C	ACT		\$2,070.90	\$2,300.00
9/21/2007	N	S-1009-86	C	ACT		\$396,179.10	\$611,723.00
11/27/2007	N	S-122-80	C	ACT	12/13/2006	\$548,012.00	\$395,158.00
1/9/2008	N	184-77	C	ACT		\$153,983.70	\$380,167.00
1/9/2008	N	S-2004-86	C	P		\$21,516.30	\$139,798.75
2/12/2008	C	UO-396	C	ACT		\$87,750.00	\$435,825.00
2/20/2008	C	O-69-82	C	P	9/15/2003	\$87,750.00	\$287,225.00
3/26/2008	S	S-3031-90	C	P	3/29/2007	\$159,000.00	\$137,500.00
5/1/2008	S	U-4013-91	C	P	5/22/2001	\$157,010.00	\$132,987.00
5/23/2008	S	P-656	C	ACT	6/30/2005	\$778,000.00	\$997,400.00
6/12/2008	N	3-72	C	P		\$324,000.00	\$123,985.00
8/7/2008	S	S-19-85	C	P	1/26/2004	\$225,000.00	\$429,106.00
8/29/2008	N	S-1008-89	C	RO		\$243,000.00	\$446,825.00
9/15/2008	N	S-1045-87	C	ACT	10/15/1999	\$209,250.00	\$664,207.00
11/26/2008	C	120-79	C	ACT		\$209,250.00	\$744,924.00
1/6/2009	C	U-5071-86	C	ACT		\$243,000.00	\$677,795.00
3/25/2009	C	S-6020-87	C	P		\$209,250.00	\$414,800.00
3/25/2009	S	149-79	C	P	5/22/2001	\$377,230.00	\$359,750.00
3/31/2009	N	51-78	C	ACT		\$209,250.00	\$299,900.80
6/1/2009	C	S-6033-86	C	P	7/25/2001	\$209,250.00	\$415,235.40
6/1/2009	N	S-28-83	C	ACT		\$209,250.00	\$347,902.50
6/15/2010	N	S-2003-88	TBC	ACT	12/13/2006	\$716,414.00	\$589,630.00
7/22/2010	C	O-6013-88	C	ACT	8/27/2003	\$2,467,307.00	\$932,400.00
7/22/2010	C	S-73-85	C	NA	8/27/2003	\$235,000.00	\$95,700.00
8/30/2010	C	S-6-85	C	P	4/27/1999	\$243,000.00	\$497,000.00
1/12/2011	N	P-177-85	C	ACT		\$121,500.00	\$311,940.00
2/18/2011	N	S-1018-88	C	ACT	12/8/2000	\$209,250.00	\$594,960.00
5/17/2011	N	S-1005-95	UCW	ACT	9/10/2003	\$276,000.00	\$805,210.00
11/2/2011	N	S-2006-86	C	P	12/12/2006	\$325,000.00	\$524,000.00
5/25/2012	C	S-34-82	UCW	P	12/10/2001	\$732,433.00	\$883,541.60
5/30/2014	N	7-81	UC	UC	6/10/2011	\$1,547,925.00	\$742,700.00

Total: 85 **\$25,532,528.92** **\$36,382,673.18**
Variance: **42.50%**

Note: Excludes 4 permits where the variance exceeds 2 standard deviations under the mean.

Total Unskewed: 74 **\$24,033,512.62** **\$27,340,747.43**
Variance Unskewed: **13.76%**

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Note: The variance of these 11 permits exceeds 2 standard deviations over the mean. Sparse WQ data at time of Tiff Hilton's liability estimation, new seeps found after estimation, additional roads, more and larger ponds required after original estimation are the factors in the variance. For S-6029-86 a large underground AMD pool and other problems were discovered during requisition planning, which were not addressed in the initial liability estimate. Without these 11 permits, the variance is 18.29%.

Variance = (Water Contract Amt - WQ Total Cap Dollars) / WQ Total Cap Dollars

Appendix C

Consensus Coal Production Forecast for West Virginia: 2014

FINAL REPORT

Prepared for:

**Special Reclamation Fund Advisory Council,
West Virginia Department of Environmental Protection**

Date:

August 15, 2014



CBER
CENTER FOR BUSINESS
AND ECONOMIC RESEARCH

Consensus Coal Production Forecast for West Virginia: 2014

FINAL REPORT

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Disclaimer:

The contents of this report reflect the views of the authors who are responsible for the accuracy of the data presented herein. The views expressed in this report are those of the authors and do not reflect the official policy or position of Marshall University or its governing bodies. The use of trade names, if applicable, does not signify endorsement.

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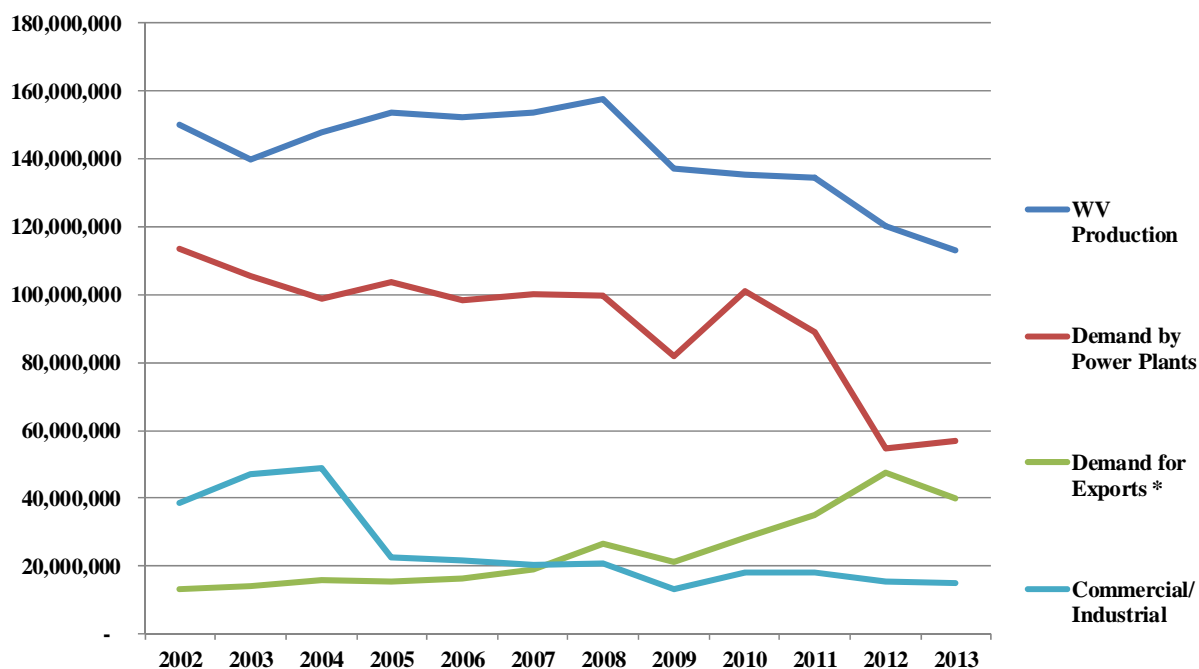
Consensus Coal Production Forecast for West Virginia: 2014

Overview

The West Virginia Consensus Coal Production Forecast is a combined production forecast comprised of four component forecasts. A consensus approach to forecasting seeks the “wisdom of crowds” in producing an expectation for output from the coal industry. The Consensus Forecast is used in planning analysis to provide the best expectation of tax to be collected for mandatory reclamation activities conducted through the Special Reclamation Fund and the Special Reclamation Water Trust Fund.

West Virginia coal production for 2013 was around 113 million tons (Energy Information Administration 2014),¹ a decline of about six percent from the 120 million tons produced in 2012. Further, 2013 values were 28 percent below 2008 production of 158 million tons, peak production during the 2002 to 2013 time period. This decline reflects various trends and events within the coal industry’s primary markets: power generation, exports and industrial demand. Recent demand trends with preliminary sector-level data for 2013 are shown below.

Figure 1: Historical West Virginia Coal Production and Components of Demand (tons)



Source: (EIA 2014). * 2013 volumes estimated by MU CBER. Other 2013 figures are preliminary EIA.

¹ 112.9 million tons is the final 2013 value published by MSHA, the source of EIA’s publications, and is clean coal production reported on MSHA Form 7000-2. As EIA will conduct its own internal evaluation of the data prior to publishing its 2013 Annual Coal Report what it reports as final tonnage for 2013 may not match this amount. The West Virginia Office of Miner’s Health, Safety and Training reports 2013 production of 119.5 million tons but this is not exclusively “clean” coal, which is the final production volume.

The Electricity Sector

Although demand for West Virginia-produced coal by the electricity sector increased slightly from 2012 to 2013, the significant decline observed since 2010 is expected to continue. Natural gas prices rose in 2013 from the historic lows of 2012, which contributed to the increase. Much of the anticipated short-term decline in demand will be due to closure of many power plants in the eastern U.S. that have been announced for the 2014 to 2016 time period in order to comply with Environmental Protection Agency (EPA) air quality regulations. Power plants must comply with the Mercury & Air Toxics Standard (MATS) rule, which requires fossil-fuel steam electric generators to meet emissions limits based on maximum achievable control technologies (MACT)² for emissions of acid gases, toxic metals, and mercury. In 2011, at least 10 percent of the coal-fired generation fleet was expected to be retired by 2022 (Edison Electric Institute 2011).

Based on lists of announcement retirements and review of EIA power plant data by MU CBER, at least 78 plants that were customers of West Virginia coal between 2002 and 2012 have already retired or have announced full retirement. Several plants due to retire have already reduced consumption of WV coal, thus causing the effects of retirement to occur prior to full implementation of MATS. It is likely that the number of established plant customers of WV coal will be reduced to about 65 plants by 2022, compared to 90 plants in 2012. The majority of the closures are smaller plants, and with a few exceptions the larger plants will remain open.

The EPA has also issued draft standards to limit carbon dioxide emissions using authority under the Clean Air Act (CAA) Section 111(d) to set limits for states that would apply to existing generating units, and would have the greatest impact on coal-fired plants. The impact and timing of this future rule is still somewhat uncertain as each state will be instructed to determine its own method of compliance. Full compliance would need to be met in 2030 and is a reduction in carbon emissions of 30 percent from 2005 levels.

The Industrial Sector

As shown in Figure 1 demand for coal by the industrial sector - i.e. coke plants and self-generating manufacturers - has not declined as dramatically as demand in the electricity sector. In 2013, industrial demand for West Virginia coal continued a slow and steady decline similar to what has been observed since 2005.

The industrial sector is subject to new emissions regulation requiring industrial boilers and process heaters to conduct periodic tune-ups or meet emissions limits on hazardous air pollutants (HAPs) to comply with MACT criteria. Regulations were finalized in December of 2012 (Energy Information Administration 2014). Several large industrial facilities that currently self-generate

² MATS-compliant units are installed with flue gas desulfurization (FGD) scrubbers or dry sorbent injection (DSI) systems and possibly activated carbon injection to control mercury emissions.

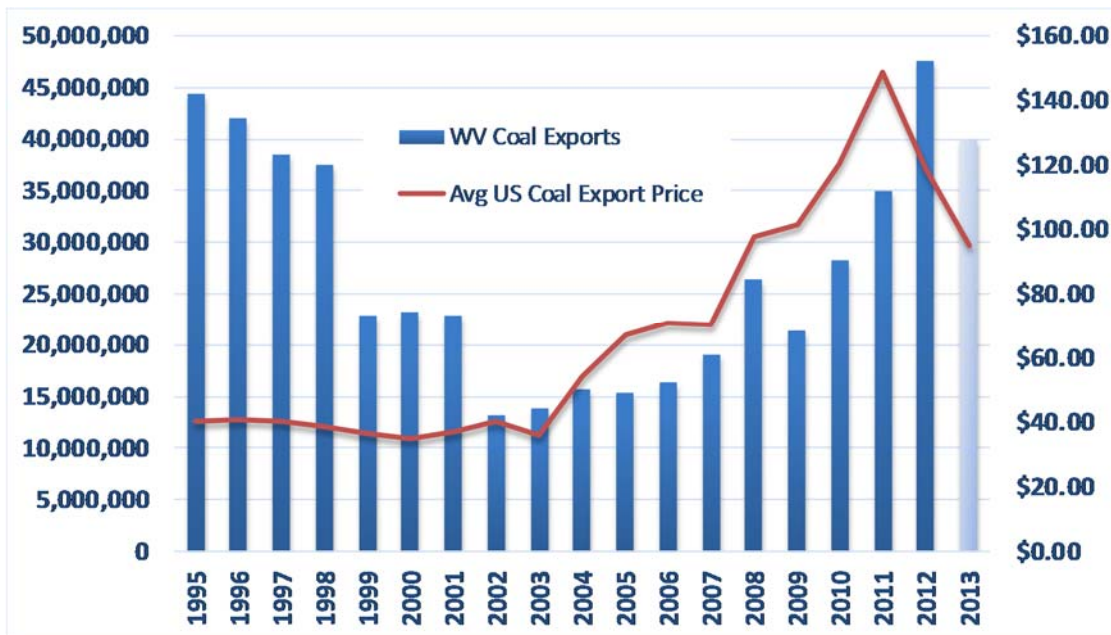
electricity using West Virginia-sourced coal have announced conversion to natural gas as a primary fuel source including RED-Rochester in New York (Recycled Energy Development 2013), and the Fernandina Beach Mill in Florida (Business Wire 2012). EIA’s national-level projections forecast nearly no change in industrial demand for coal. Growth in industrial production from other macroeconomic factors is expected to offset the impact of additional capital costs incurred due to compliance; however, events such as these conversions suggest that industrial demand for West Virginia coal may decline more quickly.

Exports

West Virginia’s and the nation’s coal exports more than tripled between 2002 and 2012, but fell in 2013³. US coal exports totaled 117.7 million short tons in 2013 down from approximately 125.7 million short tons in 2012. Some of the decline may be due to slightly increased exchange rates for Euros to Dollars seen since 2008.

West Virginia has consistent exports to more than 30 countries throughout the world, with some of the greatest demand from European countries including the Netherlands, Italy, France, Germany and the U.K. The EIA projects total US coal exports to grow by 25% between 2013 and 2035.

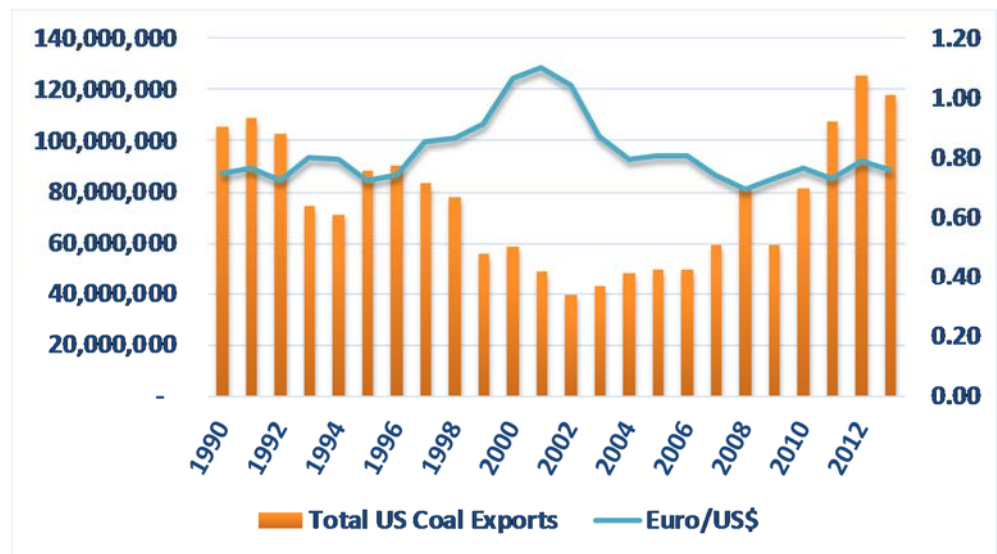
Figure 2: West Virginia Coal Exports (Tons) and Average US Coal Export Price



Source: EIA 2014. *2013 export tonnage estimated by CBER.

³ 2013 data for coal export tonnage by U.S. state of origin has not yet been released. CBER estimates export tonnage based on value of coal exports published by the International Trade Administration and average export prices.

Figure 3: Historical US Coal Exports in Tons and Exchange Rate of Euro



Looking Forward

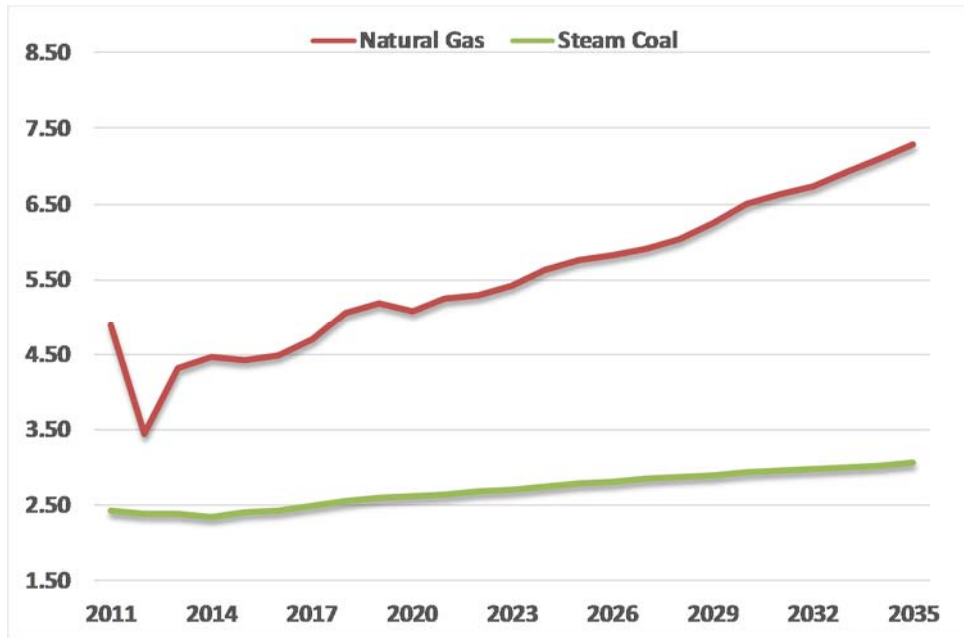
Future demand for West Virginia Coal depends on several variables including the prices of competing fuels, the longevity of the fleet of coal-fired power plants that have historically burned coal from the State, the rate of economic growth of importing countries and the nature of compliance with proposed carbon regulation.

As noted previously, the capacity of power plants available to use West Virginia coal continues to shrink as plants retire. While most retirements to date have been older plants with relatively small capacities, the occasional retirement of larger plants, e.g. Hatfield’s Ferry in 2013 (The Herald-Standard 2013) and announcement of the intent to retire others, e.g. Brayton Point in 2017 (The Boston Globe 2014), represent loss of larger supply contracts for WV producers.

The price of natural gas also affects utilization of coal-fired power plants. Supply of natural gas continued to be high in 2013, although higher prices of natural gas than in 2012 made coal-fired generation more competitive. In its Annual Energy Outlook (AEO) 2014 Base Case analysis, the EIA continues to project natural gas prices, including for gas delivered to the power generation sector, to increase at a faster rate than coal prices. Thus, the expectation is that the rise in the relative price of natural gas will potentially moderate declines in coal demand. Included as a component of this analysis is the assumption that the U.S. will become a net exporter of natural gas by 2020.

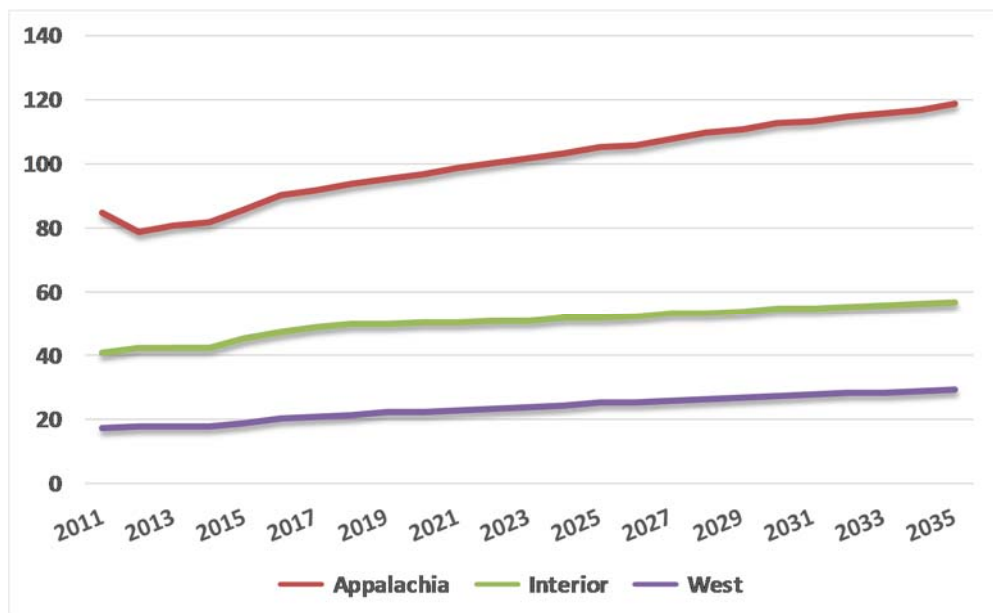
⁴ The simple correlation coefficient confirms the negative association between national coal exports and the exchange rate between the Euro and the US Dollar. The correlation is -.54 for concurrent demand and exchange rate. When comparing the exchange rate with a two year lag of exports, the correlation increases in absolute magnitude to -.67 suggesting international markets take time to respond to changes, perhaps reflective of the influence of long-term purchase contracts.

Figure 4: EIA Forecasted Natural Prices & Coal to Electricity Sector (2012 \$/MMBtu)



The relative price of West Virginia coal and Western and Illinois-basin coal is another factor influencing demand. WV producers have lost market share in the power generation sector to coal produced in Ohio, Illinois, Wyoming and other states. The EIA projects Appalachian coal prices to increase at a faster rate than both Interior and Western coals, due in part to more rapid declines in productivity resulting from operating in more marginal reserve areas, regulatory restrictions on surface mines and fragmentation of underground reserves that limit economies of scale (US Energy Information Administration 2014).

Figure 5: EIA Forecasted Minemouth Coal Prices, by Region (2012 \$/ton)



Component Forecasts

Energy Information Administration (EIA)

Publication: Annual Energy Outlook 2014
Date: April 2014
Forecast Horizon: 2013-2040
Region(s): Northern Appalachia, Central Appalachia

The EIA provides a forecast of coal production by region in its Annual Energy Outlook, projecting through 2040 (Energy Information Administration 2014). This projection is generated using the National Energy Modeling System (NEMS). NEMS uses a market-based approach that balances energy supply and demand while considering regulations and industry standards.

The EIA's regional forecasts are adjusted to adapt these figures to forecast West Virginia coal production. The Northern Appalachia region includes Pennsylvania, Maryland, Ohio, and Northern West Virginia while Central Appalachia includes Virginia, Eastern Kentucky, Northern Tennessee, and Southern West Virginia. To forecast West Virginia coal production through 2035, the annual growth rate for Northern Appalachia is applied to historical production figures for Northern West Virginia and the annual growth rate for Central Appalachia is applied to Southern West Virginia figures.⁵ Only the EIA Reference Case figures are used.⁶

Key Assumptions:

Macroeconomic Issues: The long-term macroeconomic projection from IHS Global Insight, Inc. is used in the EIA forecast. Real GDP growth averages 2.4% per year from 2012 to 2040.

Coal Prices: U.S. real minemouth prices are expected to increase from \$39.94 per ton to \$59.16 per ton in \$2012 by 2040, reflecting the assumption that coal mining productivity will continue to decline. EIA expects Appalachian coal prices to also increase due to a continued shift toward more higher-value coking coal exports, although price projections are lower than in the AEO2013, which forecast U.S. minemouth prices to increase to \$61.28 by 2040.

⁵ For more information on the adaptation of the EIA's forecasts, see Appendix A.

⁶ The EIA presents five primary situations in the Annual Energy Outlook 2014: a Reference Case, a High Economic Growth Case, a Low Economic Growth Case, a High Oil Price Case, and a Low Oil Price Case. The Reference Case was selected for the Consensus Forecast as a continuation of current trends, assuming known technology and technological/demographic trends.

Natural Gas Prices: Real \$2012 Henry Hub ⁷ spot prices for natural gas are expected to increase by an average of 3.7% per year, rising to \$7.65 per million Btu in 2040.

Electricity: Overall electricity supply is projected to increase by 25% from 2012 to 2040. Total electricity generated by coal is projected to increase by 11 percent from 2012 to 2040.

Industrial/Commercial: The industrial sector is expected to maintain fairly constant coal consumption through 2025 compared to 2012 levels, after which usage is projected to decline. After 2025, a decline in metallurgical coal use of about 15 percent by 2035 is projected, relative to 2012 levels. Other industrial use is projected to remain fairly constant at around one quadrillion Btu. The commercial sector is expected to maintain flat coal consumption throughout the forecast period of 0.04 quadrillion Btu.

Exports: National coal exports are expected to increase by 27% by 2035 compared to 2012 exports of 126 million tons. Forecasts for individual coal-producing regions are not published.

Environmental: Current legislation and environmental regulations for which implementing regulations were available in 2013 are considered in the forecast. Thus, the AEO2014 Base Case forecast does not include any assumptions for regulating carbon emissions, except to simulate market reaction to potential future regulation, a small increase in the cost of capital modeled for new coal-fired power plants without carbon capture and sequestration (Energy Information Administration 2014), although this assumption has only a small effect on production. The EIA does model three different greenhouse gas cases with varying economy-wide CO₂ emissions prices under which coal production is significantly lower than its Base Case.

⁷ The Henry Hub in Louisiana is the delivery point for the natural gas futures contract on the New York Mercantile Exchange.

Results:

Table 1: EIA Annual Energy Outlook 2014 Adapted to WV Production

West Virginia Coal Production (million tons)				
Historical	Preliminary	Forecast		
<u>2012</u>	<u>2013</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
120.4	112.9	116.8	114.8	104.2
Forecast				
<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
96.2	100.9	103.9	102.8	102.0
Forecast				
<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
101.3	101.0	100.4	100.3	100.2
Forecast				
<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
98.5	98.8	97.1	97.6	97.4
Forecast				
<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>
98.4	96.9	96.9	98.0	96.8

Energy Ventures Analysis (EVA)

Publication: EVA Long-Term Forecast

Date: May 2013

Forecast Horizon: 2013-2040

Region(s): Northern Appalachia, Central Appalachia, West Virginia

EVA utilizes the Aurora XP Dispatch Model that calculates electricity generation by fuel type by developing the least cost generation situation that will meet power demand. All existing and planned generation capacity is included and the model can add or retire capacity as needed (Energy Ventures Analysis 2013).

Key Assumptions:

Macroeconomic Issues: GDP growth is expected to average 2.3% per year through 2040.

Coal Prices: Coal prices for both Northern and Central Appalachia are expected to increase. Northern Appalachia will reach of price of almost \$70 per ton (\$2013) and Central Appalachia will see a price over \$90 per ton by 2040, averaged for both metallurgical and steam coals.

Natural Gas Prices: A competitive gas supply is a key assumption of the model. Gas prices are expected to steadily increase through 2040 resulting in a price over \$7 per MMBtu.

Electricity: Growth in electricity demand is expected to average 1.3% per year through 2040. Demand for Appalachian coal by the electricity sector will fall by 50% between 2012 and 2040.

Industrial/Commercial: Non-coke industrial demand for Appalachian coal will fall by about 40% by 2040. Demand for metallurgical coal from Northern and Central (primarily) Appalachia will rise by about 20% by 2040.

Exports: Steam coal exports from Northern and Central (primarily) Appalachia will peak in 2013 and decline by about 45% by 2040. Met coal exports from Northern and Central (primarily) Appalachia will peak in 2012 and decline by about 40% by 2040. An export terminal will be constructed in the Pacific Northwest to deliver coal from the Powder River Basin (PRB) and the Rockies to Asia. Compared to 2011 volume, total Appalachian coal exports decline by 35% by 2040.

Environmental: The Clean Air Interstate Rule (CAIR) is assumed to continue with impacted emitters exceeding compliance. The Cross-State Air Pollution Rule (CSAPR) has been overturned and will not be replaced. The Mercury and Air Toxics Standards (MATS) will continue through April 2015 plus a one year extension. Section 316(b) of the Clean Water Act,

which covers cooling water intake structures, requires compliance by 2018 and the Coal Combustion Residuals (CCR) requires compliance by 2020. National Ambient Air Quality Standards (NAAQS) revisions will become affective after 2018. Greenhouse Gas New Source Performance Standard is assumed to see significant revisions to the draft proposal, and CO2 policies are not considered at the national level.

Results:

Table 2: EVA Long-Term WV Coal Production Forecast 2014

West Virginia Coal Production (million tons)				
Historical	Preliminary	Forecast		
<u>2012</u>	<u>2013</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
120.4	112.9	117.1	115.3	110.2
Forecast				
<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
102.8	105.0	104.4	103.3	101.0
Forecast				
<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
101.7	102.8	101.6	102.1	100.3
Forecast				
<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
99.5	99.2	98.9	98.4	97.1
Forecast				
<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>
95.3	93.8	91.1	87.9	82.8

Marshall University Center for Business and Economic Research (CBER)

Publication: CBER West Virginia Coal Production Forecast 2014

Date: June 2014

Forecast Horizon: 2013-2035

Region(s): West Virginia

The CBER forecast of West Virginia Total Coal production is an econometric model based on quarterly changes in total production from 1984 through 2012. The forecast model treats 2012 as a structural change in the coal market.⁸ Data for the model are from EIA's monthly coal fuel receipts contained in Schedule 2 of Form EIA-923.⁹ To create the initial short-term forecast, quarterly changes in total coal production were modeled with a vector autoregression (VAR) approach that explicitly accounted for forecasted demand for West Virginia-sourced coal in regional power generation.¹⁰ For years beyond 2022, the CBER forecast utilizes an autoregressive approach, which estimates future changes in total coal production based on historical patterns. Key assumptions underlying the model include:

Macroeconomic Issues: Moderate average annual GDP growth rates of about 2 to 3% per year, consistent with other macroeconomic forecasts.

Coal Prices: In the short-term, coal prices are expected to follow trends of the last decade, with increases exceeding that of general inflation. In the long-term prices increases are expected to be more modest and do not exceed general inflation. The relative prices of coal to natural gas observed in 2012 are perceived as an anomaly, and are not expected to be repeated in the forecast horizon.

Natural Gas Prices: Stable gas prices in the near term, with modest growth in real natural gas prices of 3 to 4% annually through 2022. The planned addition of new gas capacity will also impact regional competitiveness in the near-term.

Electricity: Growth in electricity demand in the Eastern region of 2.5% over the short term forecast horizon. Demand for West Virginia coal by the electricity sector in the Eastern region expected to decline by approximately 6.5% annually between 2013 and 2022.¹¹

Industrial/Commercial: The conversion of former coal-fired self-generators to natural gas is expected to reduce industrial demand for West Virginia coal.

⁸ Dummy variables were included in the model to identify 2012 which moderated the decline in forecasted values that otherwise result when weighting 2012 equally to the preceding years. See Hansen (2001) for a discussion of structural change as relating to U.S. Labor market trends. http://www.ssc.wisc.edu/~bhansen/papers/jep_01.pdf

⁹ Form EIA-923 is available at <http://www.eia.gov/electricity/data/eia923/>.

¹⁰ For more detail on the power generation demand model, see Appendix B.

¹¹ 6.5% is a compound annual rate.

Exports: Moderate growth in export markets for West Virginia coal is expected to mitigate some of the decline in demand from the regional power generation sector.

Environmental: Power plant closures due to non-compliance with MATS are expected to continue at a steady pace through 2016. West Virginia has already lost market share at plants that are soon to retire, causing some of these effects to occur prior to closure.

Results:

Table 3: CBER Long-term WV Coal Production Forecast 2014

West Virginia Coal Production (million tons)				
Historical	Preliminary	Forecast		
<u>2012</u>	<u>2013</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
120.4	112.9	111.4	109.6	108.1
Forecast				
<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
106.8	105.4	104.0	102.7	101.3
Forecast				
<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
99.9	98.5	98.0	97.6	97.1
Forecast				
<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
96.6	96.2	95.7	95.3	94.8
Forecast				
<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>
94.4	93.9	93.5	93.0	92.5

West Virginia University Bureau for Business and Economic Research (BBER)

Publication: WVU BBER West Virginia Coal Production Forecast 2014

Date: May 2014

Forecast Horizon: 2014-2019

Region: West Virginia

The West Virginia State Econometric Model utilizes over 50 equations to predict economic behavior in West Virginia. The model identifies the sectors that depend on local, regional, national, or international conditions and treats them accordingly. The WVU BBER provides a short-term forecast that is included in the Consensus Coal Forecast.

Results:

Table 4: WBU BBER West Virginia Coal Production Forecast 2014

West Virginia Coal Production (million tons)				
Historical	Preliminary	Forecast		
<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
120.4	112.9	109.8	106.2	101.4
Forecast				
<u>2017</u>	<u>2018</u>	<u>2019</u>		
101.6	101.1	101.0		

Consensus Forecast

The three long-term forecasts produced by EIA, EVA, and CBER along with the short-term forecast produced by WVU BBER are combined to create the Consensus Forecast for West Virginia Coal Production.¹² A weighted average is used to combine the four projections as follows (Armstrong 2001):

$$\begin{aligned} WV\ Coal\ Production_t & \\ &= w_{EIA} * EIA\ Production_t + w_{EVA} * EVA\ Production_t + w_{CBER} \\ & * CBER\ Production_t + w_{WVU} * WVU\ Production_t \end{aligned}$$

The weight (w_i) assigned to each forecast is based on the accuracy of past forecasts by that organization. All available forecasts for 2011 through 2013 were evaluated for accuracy. For example, EIA's 2012 Annual Energy Outlook was assessed by considering the accuracy of its 2011, 2012, and 2013 projections.

Only recent years were evaluated due to the tumultuous macroeconomic conditions that appeared in late 2007 and 2008. Predictions for the first years of the time horizon were considered because accuracy is typically highest at the beginning of the forecast. Long-term accuracy was not considered in this weighting method due to the large potential for unpredictable macroeconomic conditions to affect annual error.

The error (e_i) of a forecast was determined using the following formula.

$$e_{i,t} = \frac{Forecast\ Production_{i,t} - Actual\ Production_t}{Actual\ Production_t}$$

The absolute value of the errors was averaged for each forecasting organization to remove the effects of under-estimation and over-estimation canceling each other. Since a new methodology was used by CBER, average error was calculated by creating an in-sample forecast and comparing these results to the actual values for 2011 through 2013.

Table 5: Average Absolute Errors

Forecast	Average Error
EIA	5.94%
EVA	8.84%
CBER	7.50%
WVU	7.28%

¹² For more information on the creation of consensus forecasts, see <http://www.forecastingprinciples.com/paperpdf/Combining.pdf>.

The weight given to each organization in the consensus was calculated as follows (Armstrong 2001):

$$w_i = \frac{\frac{1}{e_i}}{\sum_i \frac{1}{e_i}}$$

One set of weights is used in the 2013-2019 time period when all four organizations created forecasts. Weights are adjusted for the exclusion of the WVU BBER forecast for the period 2020-2035.

Table 6: Consensus Weights

	Short-Term Weight	Long-Term Weight
EIA	0.30	0.41
EVA	0.21	0.27
CBER	0.24	0.32
WVU	0.25	N/A

Using the above weights, the Consensus Forecast is calculated. The results are shown below in table and figure format. The Consensus Forecast for West Virginia Coal Production shows production levels decreasing by about 10 million tons by 2016/2017 and then remaining fairly steady though 2020. After 2020, production levels show a steady decreasing trend falling to 92 million tons of coal produced in 2035.

Table 7: Consensus Forecast for West Virginia Coal Production 2014 (million tons)

Historical	Preliminary	Forecast		
<u>2012</u>	<u>2013</u>	<u>2013*</u>	<u>2014</u>	<u>2015</u>
120.4	112.9	112.9	112.4	106.9
Forecast				
<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
101.4	103.0	103.3	102.4	101.5
Forecast				
<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
100.9	100.7	100.0	99.9	99.2
Forecast				
<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>
98.2	98.1	97.1	97.1	96.5
Forecast				
<u>2031</u>	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>
96.3	95.1	94.2	93.7	91.6

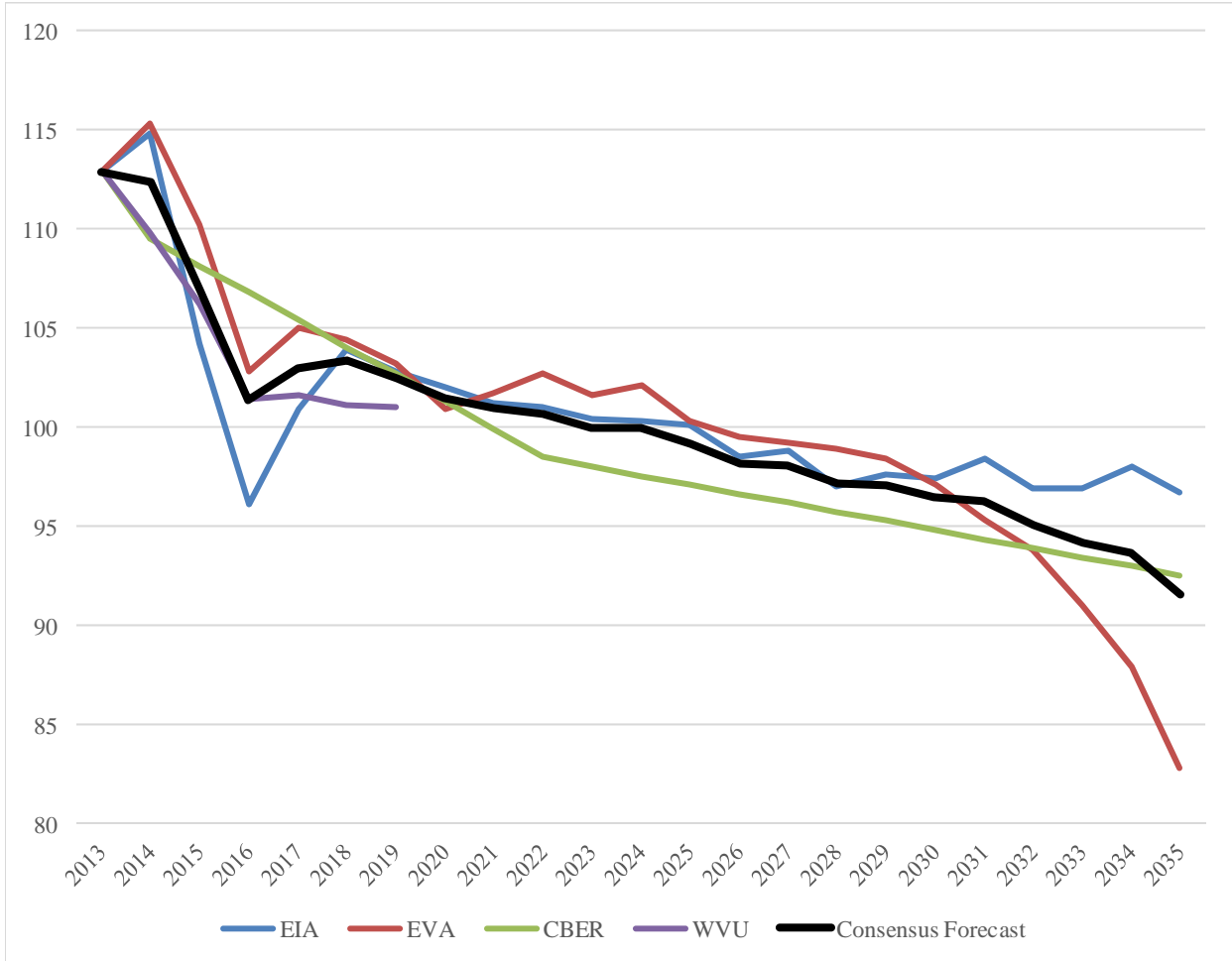
*Preliminary total production estimate from EIA

Table 8: Comparison of Component Forecasts and 2013/2014 Consensus Forecasts

West Virginia Coal Production (million tons)						
Year	Forecasting Group				2014 Consensus	2013 Consensus
	CBER	EIA	EVA	WVU		
2013	111.4	116.8	117.1		112.9*	117.4
2014	109.6	114.8	115.3	109.8	112.4	117.8
2015	108.1	104.2	110.2	106.2	106.9	113.9
2016	106.8	96.2	102.8	101.4	101.4	112.2
2017	105.4	100.9	105.0	101.6	103.0	113.5
2018	104.0	103.9	104.4	101.1	103.3	108.7
2019	102.7	102.8	103.3	101.0	102.4	105.6
2020	101.3	102.0	101.0		101.5	105.4
2021	99.9	101.3	101.7		100.9	104.8
2022	98.5	101.0	102.8		100.7	106.6
2023	98.0	100.4	101.6		100.0	107.6
2024	97.6	100.3	102.1		99.9	107.2
2025	97.1	100.2	100.3		99.2	106.3
2026	96.6	98.5	99.5		98.2	106.3
2027	96.2	98.8	99.2		98.1	106.1
2028	95.7	97.1	98.9		97.1	105.4
2029	95.3	97.6	98.4		97.1	105.0
2030	94.8	97.4	97.1		96.5	104.4
2031	94.4	98.4	95.3		96.3	103.5
2032	93.9	96.9	93.8		95.1	101.9
2033	93.5	96.9	91.1		94.2	99.6
2034	93.0	98.0	87.9		93.7	99.0
2035	92.5	96.8	82.8		91.6	97.3

*Preliminary total production estimate from EIA

Figure 6: Component and Consensus Forecasts 2014 (million tons)



* With 2013 preliminary production as published by EIA, based on mine-level data reported to MSHA.

Summary

The 2014 West Virginia Consensus Coal Forecast figures are lower than the 2013 Consensus. A primary reason for this is inclusion of final 2012 supply and demand data in forecasting models, which shifted projections of future production downward. In addition, expectations of more rapidly declining productivity in Appalachia, particularly in Central Appalachia, caused EIA to lower projections for both Northern and Central Appalachian coal production and to raise projections for Interior coal production. The AEO2014 also projects lower prices for Appalachian coal compared to AEO2013 due to lower capacity utilization at existing mines. As the EIA forecast has the largest assigned weight of all the forecasts used to construct the Consensus, its assumptions significantly influence forecast production levels.

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Appendix A: EIA Forecasts for Northern and Southern WV

The EIA forecasts coal production by region in its Annual Energy Outlook. Appalachia is split into three regions: Northern, Central, and Southern. For the purposes of this study, only the Northern and Central Appalachian regions are applicable. The Northern Appalachia region includes Pennsylvania, Maryland, Ohio, and Northern West Virginia while Central Appalachia includes Virginia, Eastern Kentucky, Northern Tennessee, and Southern West Virginia. Forecasts for these regions are adapted to Northern and Southern West Virginia production. EIA’s forecasted annual growth rates for Northern and Central Appalachia are shown first.

Table 9: Growth Rates for Coal Production in Northern and Central Appalachia (EIA)

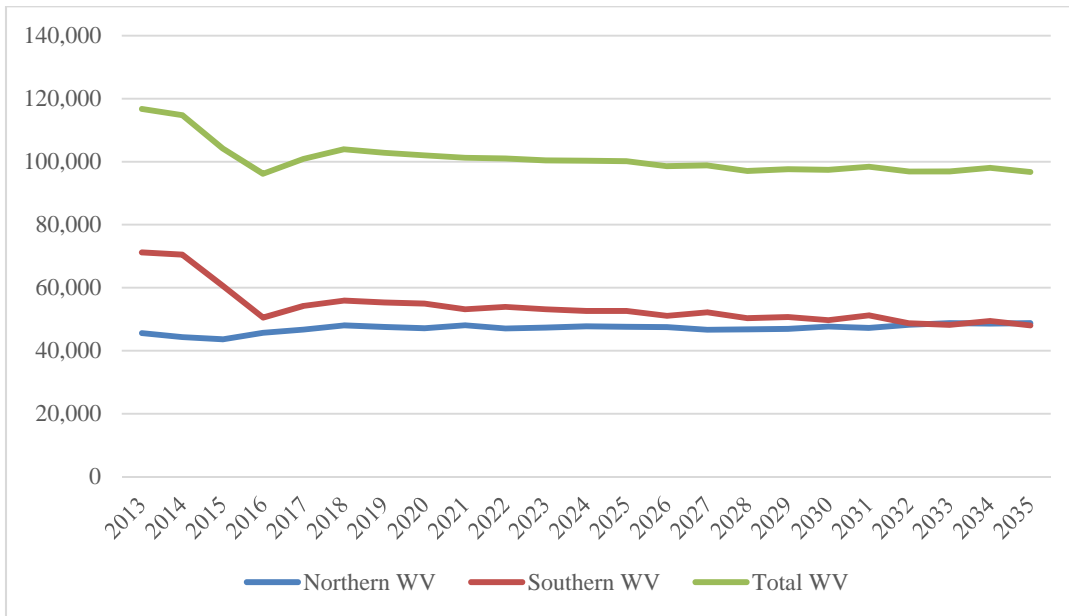
	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Northern Appalachia	9.9%	-2.8%	-1.6%	4.7%	2.3%
Central Appalachia	-9.8%	-1.0%	-14.0%	-16.7%	7.3%
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northern Appalachia	2.8%	-1.0%	-0.9%	2.1%	-2.2%
Central Appalachia	3.1%	-1.1%	-0.7%	-3.2%	1.5%
	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Northern Appalachia	0.5%	0.9%	-0.3%	-0.2%	-1.8%
Central Appalachia	-1.5%	-1.0%	0.0%	-2.9%	2.2%
	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
Northern Appalachia	0.3%	0.4%	1.6%	-1.0%	2.2%
Central Appalachia	-3.6%	0.8%	-2.0%	3.0%	-4.9%
	<u>2033</u>	<u>2034</u>	<u>2035</u>		
Northern Appalachia	1.0%	-0.2%	0.2%		
Central Appalachia	-1.0%	2.6%	-2.9%		

These regional growth rates are applied to historical West Virginia coal production data to achieve the State forecast. Growth rates for Northern Appalachia are used to project Northern West Virginia coal production, and rates for Central Appalachia are applied to Southern West Virginia. The calculated forecasts for Northern and Southern West Virginia are summed to produce the total West Virginia coal production.

Table 10: WV Coal Production by Region (EIA)

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Northern WV	45,587	44,321	43,593	45,661	46,713
Southern WV	<u>71,177</u>	<u>70,463</u>	<u>60,625</u>	<u>50,493</u>	<u>54,198</u>
Total WV	116,764	114,784	104,218	96,154	100,911
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Northern WV	48,035	47,538	47,089	48,095	47,051
Southern WV	<u>55,890</u>	<u>55,296</u>	<u>54,907</u>	<u>53,156</u>	<u>53,932</u>
Total WV	103,925	102,834	101,996	101,251	100,983
	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Northern WV	47,289	47,720	47,576	47,477	46,630
Southern WV	<u>53,127</u>	<u>52,576</u>	<u>52,579</u>	<u>51,067</u>	<u>52,165</u>
Total WV	100,416	100,296	100,155	98,545	98,795
	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
Northern WV	46,757	46,926	47,688	47,201	48,227
Southern WV	<u>50,293</u>	<u>50,683</u>	<u>49,689</u>	<u>51,195</u>	<u>48,662</u>
Total WV	97,050	97,609	97,377	98,397	96,889
	<u>2033</u>	<u>2034</u>	<u>2035</u>		
Northern WV	48,711	48,602	48,718		
Southern WV	<u>48,189</u>	<u>49,448</u>	<u>48,033</u>		
Total WV	96,900	98,049	96,751		

Figure 7: WV Coal Production by Region (EIA)



Appendix B: Power Generation Demand Forecast

To better understand the dynamics influencing total coal production for West Virginia, CBER analyzed data on West Virginia Coal consumed by power plants in the eastern region of the United States. The data for the analysis are from EIA's monthly fuel receipts data (Energy Information Administration 2014), which have been aggregated into total quarterly fuel receipts of coal sourced from West Virginia for the period 2002-2012. During the period, about 220 to 290 coal-fired plants operated in the region each quarter. Additional factors considered for the analysis include real natural gas prices and electricity demand (as indicated by average heating and cooling degree days in the region).

To construct the power generation demand forecast, CBER first projected electricity demand in the region, using coal-fired power plant capacity as a proxy. A key assumption is that capacity required to serve estimated electricity demand is irrespective of fuel type, and thus indicative of electricity demand generally. Using a vector autoregression model (VAR), CBER jointly forecasted the quarterly change in total fuel receipts for West Virginia sourced coal and real natural gas prices, conditional on modest growth in electricity demand and treating the substantial decline observed in 2012 as a structural break in the coal market.¹³

¹³ Dummy variables were included in the model to identify 2012 which moderated the decline in forecasted values that otherwise result when weighting 2012 equally to the preceding years.